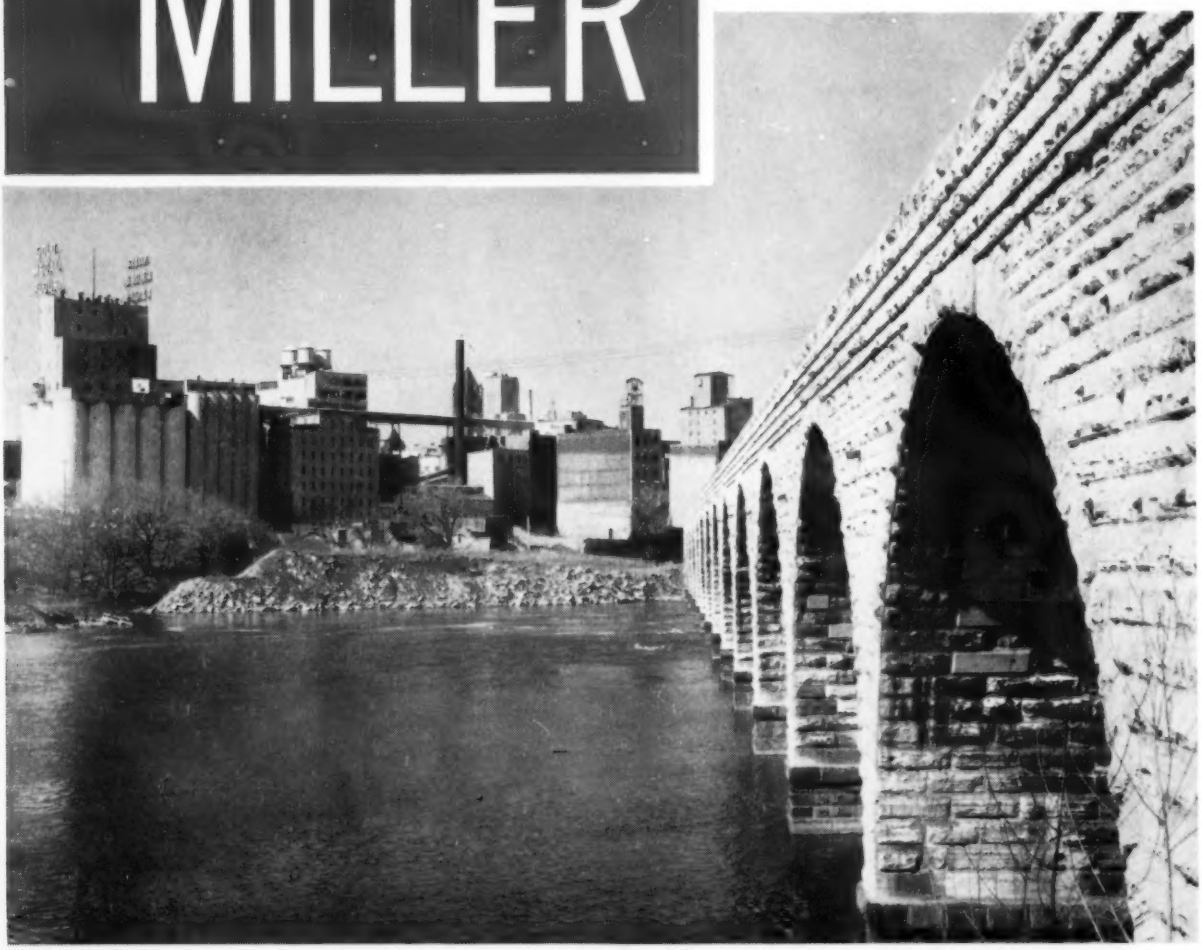
the NORTHWESTERN MILLER

THE INTERNATIONAL NEWS MAGAZINE FOR THE GRAIN, MILLING AND BAKING INDUSTRIES



Looking Across the Mississippi River to the Minneapolis Complex of General Mills, Inc., Location of the Historic "C" Mill Now Under the Hands of the Wreckers

a miller publication • business journalists since 1873

Volume 264 **NOVEMBER 14, 1960** Number 10

Gold Coin Rye

Americans love real rye bread—but they can't find it today in many of their favorite bakeries.

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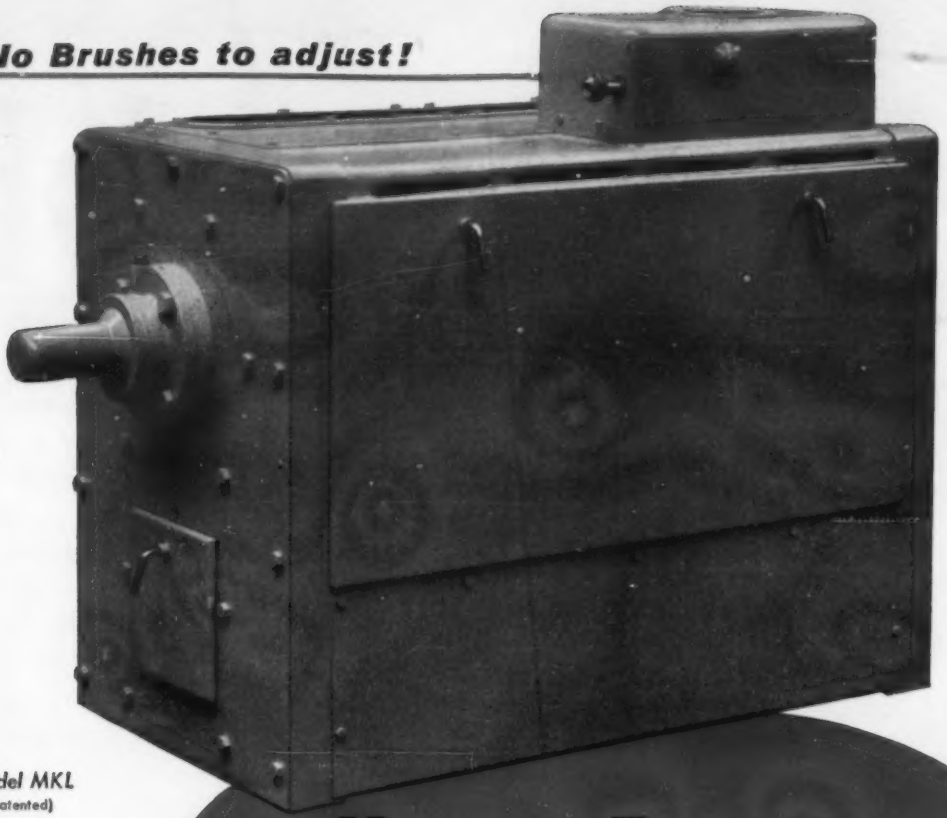

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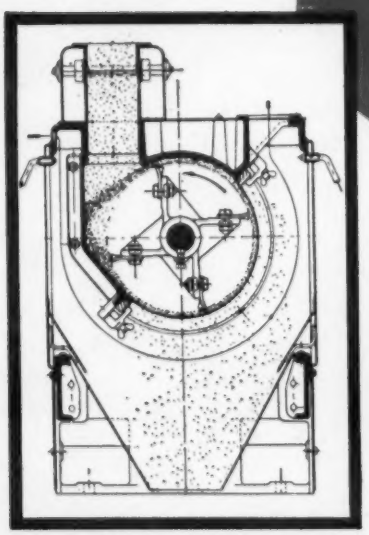

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the NORTHWESTERN MILLER

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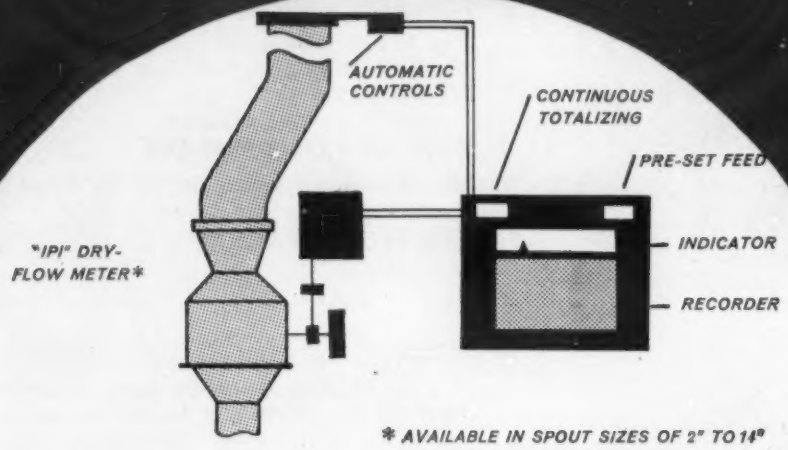

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The Cuban Danger

Cuba Lies Athwart a North American Trade Lifeline; It Must Be Kept Open at All Costs

THE CUBAN SITUATION is a perilous one for the U.S. And Canada, too. Cuba lies athwart one of the main lifelines of North American trade. An enemy force, stationed there, could wreak untold havoc on shipments of food and fiber destined for the countries of Latin America or across the North and South Atlantic Oceans.

Along the shipping routes adjacent to Cuba pass many millions of bushels of wheat, many thousands of sacks of flour, food and fiber of all kinds, machines and manufactured goods. The U.S. cannot afford to have that lifeline impeded.

No one pretends that the Marines landed at Guantanamo for a week end merely to stretch their legs. It was a symbolic warning to Castro and his minions and to Mr. Khrushchev. There is reason to believe, too, that the Russian offer of rocket support is merely symbolic, but the U.S. cannot afford to take any chances.

The thought that the U.S. is planning an attack against Cuba is unacceptable. But the circumstances are remarkably similar to those which precipitated the Suez crisis in 1956. The U.S. is threatened just as Britain and France were threatened, by a small, weak country with Soviet encouragement. Apparently, the lesson of Suez has been learned for not one of the western allies has pressured the U.S. to give up the Cuban base for the sake of amity.

The weak and immature—with Egypt and Cuba as classic examples — cannot be allowed to tyrannize the strong by blackmail. For that is Castro's metier—blackmail. Knowing full well that his opposition may break out into revolution at any moment, he is preparing the ground, aided by his Communist friends, for a charge that any attempt to remove him by force, on the part of the Cubans themselves, is an American imperialist plot.

This must be remembered. Action to protect American interests in Cuba will be action to protect the interests of the free world. And if the worst comes to the worst—war —then the lifeline that Cuba straddles must be kept open.

A firm declaration of determination now on the part of the newly-elected U.S. administration will act as a major deterrent to Castro and those who are using him as a means to needle the U.S. «

Milling Efficiency

Post Graduate Technological Training Provided by AOM; So Is Leadership of Men

HOW DO YOU JUDGE the efficiency of your mill? Not by the dollars and cents balance on the debit or credit side of the ledger at the end of the year, that's for sure. Sales prices are subject to so many pressures that even the most efficiently operated mill can lose money, it is sad to relate.

Efficiency is judged, simply and solely, on the quality of the loaf of bread which is baked from the flour coming off the mill. It is the final, acid test of efficiency. If the mill is not producing a good loaf of bread—or a good package of family flour—it is not efficient.

Efficiency does not necessarily follow with the installation of the most modern machinery available. Or the finest laboratory equipment. These things, it is true, contribute to efficiency. But there is another over-riding factor which must be present—efficient manpower.

The major contribution to mill efficiency is made by the men who run the mill—the operative millers. Without adequate training, not only in their tutorial days, with college pen in hand or sweeper's brush ever at the ready, but as "post graduates" while they work, no mill can reach the high standards needed to make a good loaf of bread.

These thoughts come forth from a man who thinks, talks, eats and—for all we know—drinks flour. He is Donald S. Eber, executive vice president of the Association of Operative Millers. Mr. Eber is continually stressing to his membership the importance of adequate training in order to produce that top quality loaf and that supreme package of family flour the customers demand.

AOM provides "post graduate" training through the media of its regular bulletin service of technical papers, through the district meetings and particularly through the annual conference. The 65th in the series is slated to be held in Minneapolis May 22-25, 1961, at the Hotel Pick-Nicollet. In addition to a wide variety of technical papers, those operative millers attending will see an exhibition of all the latest equipment available to the industry. And on hand will be some of the best-informed allied tradesmen in the land, all experts in their particular field, to explain and demonstrate their equipment and services.

For the trainees in milling, AOM also provides a correspondence course, presenting a diploma to those who complete it successfully—and efficiently.

But this is not the end of the training available to those technologists who are members of AOM. They have the opportunity of becoming officers of their particular district—there are 14 such districts in the U.S. and Canada. They can serve as a chairman or vice chairman, as chairman of the program committee or as a member of the local committee. On the national level, they can serve on the executive of the association or as a member of one of the three main committees — technical, sanitation or educational. And an operative miller in the smallest mill in the country is qualified to become president of the association which has ramifications in many overseas countries.

At the time of the national conferences, millers in the city chosen as the host can serve on innumerable committees charged with the task of organizing a conference which can attract anything up to a thousand people. A round hundred people are now in process of being appointed for this task in Minneapolis next year and every one of them will learn something to his advantage by working with others, some skilled, some unskilled as yet, in the work of organizing.

By working with others, a man develops himself and his talents. Those who visit many districts in the course of their duties—particularly allied tradesmen—often ob-

EDITORIAL OPINION

serve the elevation of a miller to a district chair who is shy, nervous and sometimes inarticulate. After a year's experience in office, he is observed again, and the man has become a confident speaker, a firm director of meetings and exhibits all the qualities of leadership.

Many firms today are looking for supervisory personnel with the quality of leadership. Many men, because of their experience in leadership obtained at AOM meetings, become of even greater value to their companies because they are ready to go on to more responsible positions. This is one of the most important advantages to be gained from participation in AOM affairs.

Mr. Eber and his elected national officers are anxious to see district appointments and committee seats spread around as many mills as possible—be they small, medium or large. The appointments are not the prerogative of the few and the few who have contributed so much in recent years are anxious to see others gain the benefits they have gained.

So having judged the efficiency of the mill, how can we judge the efficiency of AOM? That can be measured by the number of promotions that come the way of its members. A quick survey of appointments made by milling firms in recent years shows that so many of the men who are moving upwards are men who have served AOM in one way or another. They are men who have learned to lead.

The ranks are wide open. The opportunities are there waiting to be seized. No man ever finishes his training. No man ever ceases to learn. «

The New President

A Housecleaning Job on the Wheat Loan Program Demands Immediate Attention

PRESIDENT-ELECT KENNEDY will face many problems when he assumes his high office next January and not the least of those problems are of his own making. This election may well go down in history as the "pie-in-the-sky" election for he will find it extremely difficult to fulfill all the promises he has made.

Though he is the choice of only around 50% of the electorate, he is President of all the people and fortunately in his record there are several examples of statesman-like actions which give rise to the hope that he will be capable of leading a united country in the field of foreign affairs.

At home, his proposed farm program is fraught with danger and if implemented may have far-reaching economic consequences, consequences which may affect adversely the value of everybody's take home pay. No one on the Democratic side has effectively refuted the charge that his plan to secure full parity of income for the farmer through supply management will mean skyrocketing prices for the consumer.

A fertile field for him to explore, with the aid of his agricultural advisors, is the wheat loan program. Little was said about this in the campaign, but it presents the kernel of the farm problem. The program encourages the production of wheat of inferior quality and much of it can find no market other than for feed purposes. And growers are encouraged to produce high yielding, poor quality wheats on land that should never be seeded to wheat.

The unassailable fact is that no one knows accurately the levels of quality in the U.S. wheat surplus—not even the officials of the Commodity Credit Corp. Wheat to most congressmen, and to some government officials who should know better, is just wheat and they recognize no quality variation.

More and more buyers are becoming quality conscious. In the U.S. itself, the bakers are demanding tailored flours and for this the millers must have tailored wheats.

Buyers abroad, particularly in Europe, are becoming quality conscious. Great Plains Wheat, Inc., has done an effective job in pointing this out. Now it can do an even more effective job in persuading the farmers that quality wheats must be grown or markets will be lost.

The new administration can do its share by revamping the wheat loan program and it's a piece of housecleaning which cannot be neglected. «

THE YOUNGEST PRESIDENT AND THE NORTHWESTERN MILLER

President-elect Kennedy will not be the youngest President to enter The White House, though he is the youngest man, at 43, ever to be elected President. The youngest President was Col. Theodore Roosevelt who assumed office at the age of 42 upon the assassination of President McKinley.

Col. Roosevelt's signature is the first in THE Northwestern MILLER's huge Visitors' Book which reposes in the Clubroom and it is dated Sept. 3, 1901. President McKinley was shot three days later and died Sept. 14.

Vice President Roosevelt was in Minneapolis for a few days that fateful September, the guest of the late Thomas H. Shevlin, a member of the Republican National Committee. Mr. Shevlin gave an elaborate dinner for the Vice President on Sept. 2 at the Minneapolis Club and a fellow guest was the late William C. Edgar, then President of The Northwestern Miller. Col. Roosevelt remarked to Mr. Edgar that he was in need of the services of a stenographer the next morning to deal with his correspondence and Mr. Edgar proffered the facilities of The Northwestern Miller and they were accepted.

Col. Roosevelt came to the office the following morning and spent several hours dictating to the late Robert T. Beatty, then the office stenographer and subsequently a member of The Miller's staff and secretary of The Miller Publishing Co.

The records show that Col. Roosevelt, while waiting for his letters to be typed, visited with members of the staff and expressed himself with customary freedom concerning public affairs and his own political future. From Minneapolis, Col. Roosevelt went east on a hunting trip from which he was recalled a few days later to assume the office of President. «

INDUSTRY RECORD . . .
An account of Trade Affairs and Events

West Virginia Pulp and Paper Co. moving ahead with major overhaul and buildup of multiwall manufacturing facilities by investing $700,000 in improvements at Wellsburg, W. Va. Involves new equipment, construction of new warehouse. Entire project slated for completion early next year.

●

Ban on Exports

U.S. Department of Commerce has banned exports of most shipments of commodities to Cuba. Exceptions moving under general license include unsubsidized grains — barley malt, corn meal, corn flour, corn grits, hominy (for human consumption), corn cereal foods (ready to eat), oatmeal, groats, rolled oats, macaroni and macaroni products, bakery products, prepared flour mixes, wheat cereal foods, breakfast cereal foods, grains and preparations; but not wheat and flour, because these are subsidized items.

●

Acid-Modified Flour

Acid-modified wheat flour is latest development for commercial sizing material to impart strength to paper, reports U.S. Department of Agriculture. Acid-modified wheat flour has proved equal in laboratory tests to commercial sizing materials for imparting paper strength in tests at Northern Utilization Research and Development Division of USDA's Agricultural Research Service. Some papers sized with modified flour gained 43% in bursting strength, 20% in tensile strength and 93% in folding endurance.

●

Headquarters Moved

Transfer of Russell Miller-King Midas Mills' New York City sales headquarters to New Rochelle, N.Y., announced by **W. R. Heegaard**, vice president, sales. New office is at 801 Pershing Square Bldg., 271 North Ave. **W. M. Wingate** is district sales manager.

●

Quarterly Dividend

Standard Milling Co. has declared quarterly dividend of 5¢ share on Class A and Class B common stock, payable Dec. 1 to stockholders of record Nov. 15.

General Baking

Net profit of General Baking Co. for 41-week period ended Oct. 8 amounted to $878,932, after federal income taxes of $947,677, or equal to 22.8¢ share of common stock after meeting preferred dividend requirements, reports **George L. Morrison**, chairman of the board. Current net profit compares with $1,614,682, or 69.4¢ a common share for corresponding period of 1959 after federal income taxes of $1,796,737. Due to change in accounting periods, figures for 1959 have been revised to provide comparison with 1960.

●

Pillsbury Dividend

Board of directors, the Pillsbury Co., has announced quarterly dividends of $1 share on preferred stock, payable Jan. 14, 1961 to stockholders of record Jan. 2, 1961. Pillsbury has 37,236 shares of preferred stock outstanding.

●

Bemis Sales Rise

Sales of Bemis Bro. Bag Co. for first nine months of 1960 hit $99,027,586, gain of $644,692 over comparable period last year. Net income for same period was $2,200,931, or $17,292 above a year ago. Earnings a share of common stock were $3.09 for the first nine months of current year, against $3.06 in 1959. For three months ended Sept. 30, earnings were 94¢ a share of common stock, compared with $1.22 a year ago, and sales were down from $34,312,954 in 1959 to $32,670,518 this year. **F. G. Bemis**, chairman of the board, and **Judson Bemis**, president, explained third quarter dip in sales and profits due principally to slowdown in multiwall paper bag business. Outlook appears better as of October, they say.

●

Sanitation Meeting

North Central Chapter, Institute of Sanitation Management, meets in Minneapolis Nov. 17 to hear director of the city's Bureau of Environmental Hygiene talk on food inspection activities of the bureau. Meeting to be climaxed with tour of Zinsmaster Baking Co. and running commentary on bakery sanitation problems. «

AOM Technical Conference 1961

PLANNING for the 1961 annual technical conference and trade show of the Association of Operative Millers in Minneapolis is in full swing. Committee chairmen have been appointed and Donald S. Eber, AOM executive vice president, recently met with the officials to discuss programs and plans. Pictured here, in serious discussion, are, left to right: Mrs. George B. Wagner (her husband is with the Pillsbury Co.), co-chairman of the Ladies' Committee; Ot Zimmerman, Smico Sales Co., co-chairman of the Exhibits Committee, and William A. Howie, J. K. Howie Co., secretary of the international conference which will run May 22-25 at the Hotel Pick-Nicollet. Nearly 50 booths have already been reserved for the trade show.

International's Earnings Dip; Sales at Record

Earnings of International Milling for the fiscal year ended Aug. 31 dipped below the all-time record hit in the previous year, but sales climbed to a new record level. That's the statement to stockholders from Charles Ritz, chairman of the board, and Atherton Bean, president.

Fiscal year earnings for the period now closed reached $5,092,990, still the fourth highest in International's 68-year history, compared with $7,-301,965 in 1959. Earnings for the latest year amounted to $8.53 a common share compared with $11.59 a year earlier. The dip in total earnings from 1959 to 1960 figures out to 30%.

Increased expense and aggressive price competition which have hit hard at most U.S. businesses account for the decline in earnings for International. Despite this, the firm's annual report shows current assets of $70,-457,229, up from the figure of $69,-677,431 the previous year. And International's total assets at the end of the year were $106,896,211.

Areas of Progress

The report shows International moving ahead in several areas of activity, such as its profit sharing retirement program, overseas operations, its formula feed business, diversification in Canada, and reorganization of the top level management structure.

At year's end, the company employed 4,334 men and women, of whom 2,518 are members of the firm's profit sharing retirement program. A total of $511,748 was contributed by the company, out of its profits, to profit sharing, boosting the total amount in the plan to over $5 million, to be used for future benefits for employee participants.

Overseas operations were expanded with the addition of a mill at Maracaibo, Venezuela.

The formula feed business grew with addition of a new feed plant at Madison, Wis., and acquisition of a plant at Milton, Ont.

Diversification in Canada continued with purchase of a line of dehydrated packaged soups added to the complete line of prepared mixes, drink mixes, pudding mixes and gelatin manufactured by the firm's Canadian affiliate, Robin Hood Flour Mills, Ltd.

Top level management was reorganized into four separate divisions each headed by a vice president responsible for both sales and production activities. Certain staff departments continue to aid these four divisions on an over-all company basis.

An executive job evaluation program was instituted during the year to insure that our management compensation will be balanced both within the organization and with the surrounding business community. «

INTERNATIONAL MILLING CO.
And Subsidiaries
Consolidated Balance Sheet

ASSETS

	1960	1959
CURRENT ASSETS:		
Cash	$ 3,741,478	$ 4,063,878
Draft and accounts receivable, less allowance for doubtful receivables $755,595	29,574,520	28,347,413
Advances on grain purchases, etc.	1,121,808	1,738,426
Inventories of grain, flour, cereals, feed, mixes, packages, supplies, etc., including adjustment of hedging operations to market	34,742,825	34,561,953
Prepaid expenses	1,276,599	965,761
Total current assets	70,457,230	69,677,431
OTHER ASSETS:		
Investment in, and advances to, Canadian subsidiaries not consolidated (equity value per books $4,871,808)	3,463,784	3,322,811
Miscellaneous, at cost, less allowance for loss $53,938	1,483,112	986,630
Total other assets	4,946,896	4,309,441
PROPERTY AND PLANT, substantially at cost, less accumulated depreciation:		
Land	1,766,563	1,518,575
Buildings and equipment	53,405,489	51,053,421
	55,172,052	52,571,996
Less allowance for depreciation	25,001,943	23,246,107
	30,170,109	29,325,889
Improvements in progress (estimated cost to complete $1,-307,000)	1,321,976	827,551
Net property and plant	31,492,085	30,153,440
	$106,896,211	$104,140,312

LIABILITIES

	1960	1959
CURRENT LIABILITIES:		
Notes payable	$ 20,175,087	$ 15,789,737
Long-term notes payable—current portion	840,000	840,000
Accounts payable and accrued expenses other than contributions and taxes	9,008,866	8,842,270
Contributions payable to Profit Sharing Retirement Plans	511,748	729,975
Accrued taxes, including income taxes, estimated	3,141,607	5,367,433
Dividends accrued on first preferred stock	59,021	48,202
Total current liabilities	33,736,329	31,617,617
Long-term notes payable in years 1961 to 1982, inclusive, less amounts included in current liabilities	20,910,000	21,750,000
RESERVES:		
For deferred Canadian income taxes	743,962	689,167
For contingencies	211,000	209,600
For self-insurance and other purpose	358,947	232,442
Total reserves	1,313,909	1,131,209
Minority stockholder's interest	$ 93,875	$ 93,127

CAPITAL STOCK AND RETAINED EARNINGS

CAPITAL STOCK:		
Robin Hood Flour Mills Ltd.:		
Second preferred stock	1,370	1,491
International Milling Co.:		
First preferred stock	10,474,100	8,907,200
Common stock	2,240,000	2,240,000
RETAINED EARNINGS:		
Accumulated earnings, per accompanying statement	45,796,251	44,575,579
Less applied to purchase of International Milling Co. common stock held in treasury at cost	7,669,623	6,175,911
	38,126,628	38,399,668
Total capital stock and retained earnings	50,842,098	49,548,359
	$106,896,211	$104,140,312

HISTORIC "C" MILL of General Mills (old brick building in this picture) will soon leave the Minneapolis scene. Now being dismantled, its role has given way to the revolutionary new Bellera "Air Spun" milling process.

STRUCTURE BEING RAZED:

If GMI's Old 'C' Mill in Minneapolis Could Talk — the Stories It Would Tell!

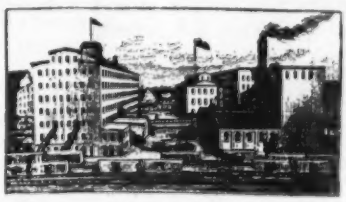
General Mills, Inc., is razing its historic "C" flour mill in the heart of the Minneapolis milling district—an edifice of brick and mortar which, if it could speak, would record a lengthy tale of more than 80 years of the industry's most crucial period.

Within the confines of the old "C" and its adjoining mills have been mirrored and tested some of the revolutionary innovations which later spread to other areas of milling and eventually 'round the world.

One of the dreams of Cadwallader C. Washburn who "came, saw and conquered" at the falls of St. Anthony in 1866, the old "C" mill was one of the last in Minneapolis run by water power. It also was the first in the flour milling industry to be equipped with steel rolls working automatically and on the system of gradual reduction.

It was the first mill provided with a filtered dust collecting system. This innovation literally was built with the mill in 1879 on the blood and experience which resulted in 1878 when the milling district was rocked to its foundation by an explosion which destroyed six mills and killed 18 persons.

The "C" mill was constructed in the days when milling was king of the industries — the industrial revolution was booming and the future looked bright as a new copper penny. So no expense was spared for its erection. The best workmen were hired, the best brains picked for new ideas, and the world was combed for equipment and machinery which would make the mill the best—the most super-efficient —of the day.



THIS IS the Washburn Crosby (now General Mills) complex at Minneapolis in 1890.

It paid off handsomely in better products, the propagation of a name —actually almost an institution—and the impact of innovation still resounds across the land.

In 1880 flour from the "C" mill won for Washburn Crosby Co., General Mills' predecessor, the famed medal of gold awarded at the Millers International Exhibition in Cincinnati.

Always enterprising, canny to the nth degree about capitalizing on quality and popular acceptance, the owners immediately named the flour Gold Medal. The rest of that story is history, and the Gold Medal name has become synonymous with flour around the world.

In just the past year, the venerable "C" mill has witnessed some startling changes reminiscent of its own heyday. GMI's new Bellera "Air Spun" process mill in Minneapolis is located just next door in the company's "A" mill building, cutting sharply the "miles" of handling and multitude of steps formerly required in flour milling. «

STATEMENT OF CONSOLIDATED ACCUMULATED EARNINGS

	1960	1959
Balance at beginning of year	$ 44,575,579	$ 40,012,073
ADD:		
Net profit for the year	5,092,990	7,301,965
Discount on first preferred treasury stock acquired	68,651	31,718
Excess of proceeds over carrying value of common stock sold from the treasury	310,235	191,804
	50,047,455	47,537,560
DEDUCT:		
Dividends:		
International Milling Co.:		
4% Series A first preferred stock	162,158	170,093
4¼% Series C first preferred stock	41,735	42,751
4½% Series D first preferred stock	113,130	117,921
5¼% Series E first preferred stock	155,808	27,676
Common stock—$3.25 per share	1,759,186	.....
	2,232,017	358,441
Robin Hood Flour Mills, Ltd.:		
Second preferred stock not owned by International Milling Co.—$10 per share stated in U. S. dollars	.....	1,487,400
	2,232,017	1,845,841
Par value of 20,185 shares of 5¼% Series E first preferred stock issued in exchange for 30,645 shares of convertible common stock, plus $687 cash adjustment	2,019,187	1,116,140
	4,251,204	2,961,981
Balance at end of year	$ 45,796,251	$ 44,575,579

SPOTLIGHT on WASHINGTON

By John Cipperly

THE RECALCITRANT trade delegation from the hard red winter wheat belt, operating under the auspices of the Foreign Agricultural Service and Great Plains Wheat, Inc., which failed to make a report two weeks or so ago, is still shy and reluctant after a renewed session here.

•

These observers of Western European wheat markets have turned in individual reports which are not to be made public. Instead, they are being submitted to GPW for editorial consolidation and subsequent submission to FAS. Then possibly they may be given to U.S. grain exporters whose chief interest is in obtaining firsthand information on the arrival condition and quality of U.S. wheats.

•

Although the members of the committee appear to have been abjured not to talk to reporters, some gleanings of information have been made available by persons present at the last meeting. These sources say that the comment in THE MILLER (Oct. 31, page 55) overemphasized the conditions which prevented issue of the report two weeks ago. The inability of the five-man committee to reconcile certain views was due to the fact that they were weary and anxious to return to their homes.

•

That seems plausible enough, but it hardly explains the irritation of the FAS grain branch chief Raymond C. Vickery who erupted before the committee over its failure to hand him a completed document. Now that FAS has surrendered the initiative of consolidating a final report without disclosing the authorship of ideas, with individual comments consolidated by the GPW staff, one may wonder why Mr. Vickery exhibited irritation.

•

That Mr. Vickery did explode, as reported by THE MILLER, has been confirmed by committee members present at the session. In fact, some members have expanded on previous information that they are far from satisfied about the capabilities of some U.S. agricultural attaches in certain Western European nations. Some top staff officials, it is alleged, advocated a government-to-government trading basis to assure foreign governments of top quality hard red winter wheats.

•

Now the publicity barrier set up by FAS officials has been broken down further. It is said that certain foreign governments, claiming to be under Communist pressure for government-to-government deals, state that this method may be the best way to insure protection of government officials and the importing trade against accusations that U.S. exporters are exploiting the governments with deliveries of inferior grain.

•

It may be recalled that many years ago, when the U.S. government ran its monopoly on wheat and flour exports, a buying mission from one European country sent to its home country wheat which represented the commingling operations of the Commodity Credit Corp. The home government charged the local millers with the cost of cleaning wheat of inferior grades.

•

Again from USDA sources comes the news of an export program which would authorize foreign buyers to demand and receive—because of constancy of baking quality—deliveries of hard red winter wheats from specified areas. These areas appear to be eastern Colorado, western Kansas and northwestern Nebraska.

•

The suggestion appears to be that only hard red wheat from these areas measures up to the baking quality desired by certain nations in Western Europe and that other shipments, while meeting ordinary U.S. grade standards, fail to meet the baking quality standards desired.

•

GPW appears to have things totally in hand and will nail down only certain areas of the wheat producing states as first call to fill the export needs of Western European bakers.

•

Another item at issue in Western Europe was the clean-out charge on wheat under U.S. grain standards. It seems to have been agreed in the recent committee session that foreign buyers are willing to forego the clean-out notation on the certificate and handle the clean-out provision on their own account after the cargo has been landed in Europe.

•

While the GPW organization is pursuing a vital and constructive purpose for the wheat growers in its area of operation who will be affected by the conclusions of this secret report, it is interesting to note that all wheat exports under FAS are subsidized by the U.S. taxpayer and it is accordingly suggested that decisions affecting the expenditure of the taxpayers' money should be revealed to those taxpayers for their observations.

•

The negative note upon which the five-man committee ended its first meeting led some members of the committee to believe that the adjournment was called to permit "local brainwashing" of some member or members on reaching home. But it is more than casually interesting to note that once the committee reassembled, it again failed to provide for public distribution the individual comments of members. Instead, those comments will appear in obscure anonymity consolidated by a group which operates in some part on government funds and which also relies on the bounty

SUBSIDY PLANS

Establishment of a common subsidy for all red winter wheat from the three coastal ranges—Pacific, Gulf, Atlantic—is the plan of the Commodity Stabilization Service. No mention is made of St. Lawrence Seaway outlets, but since traffic is virtually halted now, it is likely that action here will be delayed until the spring. CSS officials say they do not wish to get involved in any complex problems like special subsidies for hard red winter wheat such as is implicit in the Great Plains Wheat organization's proposals for top quality red winters from the triangular area of eastern Colorado, northwestern Nebraska and western Kansas.

INSIDE SCIENCE

THE VITAL STORY OF

Breakfast Cereals

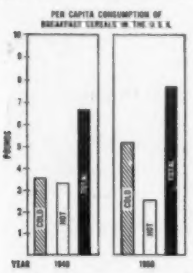
with essential vitamins and minerals restored

by Science Writer

New Edition

America Likes Breakfast Foods

The consumption of the dry type of cereals which are usually eaten cold has increased significantly. It shows a much higher rate of increase in recent years. For instance, in 1958 the per capita consumption of the cold type was 5.1 pounds as compared with 3.5 pounds in 1940. On the other hand, the hot type fell off from 3.2 pounds in 1940 to 2.5 pounds in 1958. Total consumption in this same period increased from 6.7 pounds in 1940 to 7.6 pounds in 1958.



Why are breakfast cereals so well-liked? They are tasty; they are easily served; they appeal to busy homemakers, as well as institutional dietitians, because they are readily available in a variety of flavors at a modest cost. They add interest and value to an important but sometimes neglected meal—breakfast. Their use is extending to between-meal and party snacks, too. Many grains are processed to make breakfast cereals: wheat, corn, oats, rice. Eaten with fruit and milk or light cream, they contribute an excellent combination of basic, flavorful, nutritious foods to the diet.

Better Foods for Better Health Through Restoration

The science of nutrition has advanced rapidly. In the manufacturing process of some cereals, some of the essential "B" vitamins and minerals are subject to some loss, just as with other foods. These losses are inescapable when such grains are prepared for human use. When this became known, manufacturers acted to overcome the losses. They adopted restoration.

Restoration simply means that certain important vitamins and minerals are restored to the cereal food during processing, so that the vitamin and mineral values in the finished product are generally equal to the whole grain values of those elements. Wheat, corn and rice products are customarily so treated. Vitamins B_1 (thiamine), B_2 (riboflavin), niacin (another "B" vitamin), and the mineral, iron, are those most widely restored. Vitamins C and D are also sometimes added.

Pre-sweetened cold cereals emphasize the nutritional importance of added vitamins. Increased calories require more "B" vitamins for best utilization of the food.

Why the Vitamins are Important

Physicians and diet experts have proved that vitamins are essential to prevent certain deficiency diseases and to contribute to robust good health.

Vitamin B_1 (thiamine) helps build and maintain physical and mental health. It is essential for normal appetite, intestinal activity, and sound nerves. A lack of this vitamin leads to beriberi, a rarity in the U. S. A., but still a very serious health problem in other parts of the world.

Vitamin B_2 (riboflavin) is essential for growth. It helps to keep body tissues healthy and to maintain proper function of the eyes.

Niacin is needed for healthy body tissues. Its use in the American diet has been largely responsible for the virtual disappearance of pellagra, a serious disease.

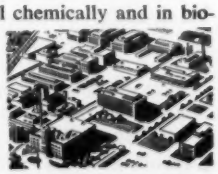
Vitamin D helps children develop normal teeth and bones. It prevents the development of certain abnormal bone conditions in adults.

Iron is essential for making good red blood and for the prevention of nutritional anemia.

Where Do the Vitamins Come From?

At about the same time that processing losses in breakfast cereals became known, other developments in the scientific world made available ample supplies of vitamins at economical prices. Thus, the nutritional contribution of some breakfast cereals could be, and was, greatly improved through restoration.

Since the early days of breakfast food restoration and of white flour and white bread enrichment, the world-famous firm of Hoffmann-La Roche has supplied top quality vitamins *by the tons.* Pioneering work in its laboratories and by its collaborators resulted in the "duplication" of some of nature's extremely complex substances. First, the chemical composition of the vitamin was learned. Second, the pure substance was isolated. Third, the "duplicate" was made by synthesis. And fourth, the laboratory techniques were extended to large scale commercial operations.



The manufactured "duplicate" is identical chemically and in biological activity with nature's own product. A vitamin is still a vitamin regardless of whether nature or man made it. So efficient is large-scale manufacturing, that vitamins are sold at a lower cost than if they were extracted from natural sources.

This article is one of a series devoted to the story of vitamin enriched or restored cereal products: white flour, white bread and rolls, corn meal and grits, macaroni products, white rice, breakfast cereals, farina. Reprints of this article, of any other in the series, or of all are available without charge. Please send your request to the Dept. of Education, Fine Chemicals Division, Hoffmann-La Roche Inc., Nutley 10, N. J. In Canada: Hoffmann-La Roche Ltd., 1956 Bourdon Street, St. Laurent, Montreal 9, P. Q.

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DURUM SUBSIDY

Reports from Europe that the Commodity Stabilization Service will establish a subsidy for the export of durum wheat within a short time are labeled incorrect by officials. Though they admit durum is in good supply, they point out that since it carries a premium support rate, they do not contemplate any subsidy at this time.

payments for wheat for export under FAS programs.

One laconic report reaching this office from New York noted "where there's smoke, there's fire." «

The Other Side Of the Coin . . .

IT IS IMPORTANT to report another side of the coin concerning the controversy surrounding the inability or reluctance of the five-man committee to reach a unanimous decision for publication after their visit to Western European wheat and flour markets.

•

An old line official—a most articulate and persuasive gentleman—has underlined some aspects of the hard red winter wheat export problem which the top brass dismiss the instant they come under critical fire.

•

This official spoke up briskly, saying in effect: "Mr. Reporter, here is what we face and here is what we are trying to do. This concept we have undoubtedly proposes an utterly different approach to wheat production in the U.S. We are facing a buyers' market in Western Europe which will become a buyers' opportunity as soon as the European Common Market takes effect."

•

Continuing, he says that Western European buyers want a chance to buy high protein red winter wheat. They want a guarantee of selection of hard red winter wheats for their domestic baking purposes and they do not want to run the risk of the broad general grades now available for any grade standard of U.S. hard red winters.

•

In short, this gentleman is speaking of tailored grades of hard red winters for Western European markets.

•

There lies the problem—and it has been "discovered" and is being explored by Great Plains Wheat, Inc. «

Italian Milling Engineers Examine Market, Want to Help, Not Teach American Millers

For over a year now, peppy Lawrence Jarach has been studying the U.S. market for flour milling machinery. Just what, his associates in Italy asked him, can we expect to do for the American millers? We have built 700 mills, large and small, in 35 countries. We believe our technical know-how is good. We believe we have the right men to meet their needs.

Mr. Jarach's report was: "We cannot teach the American millers anything. We cannot expect them to take our ideas unquestioned. We must adapt our ideas to their requirements."

The firm Mr. Jarach's Industrial Overseas Technical Corp. represents is Ocrim of Cremona, Italy. The firm has built small installations and large installations. Right now, it is erecting a 6,000 sack mill in Uruguay; it is putting up two new mills in Chile and a miller in Brazil has just ordered his sixth Ocrim unit. The firm is working on plants in Guatemala City and in Colombia. And it has erected no less than 33 mills in Mexico, says Giuseppe Spinelli, the firm's general manager, who is currently visiting the U.S.

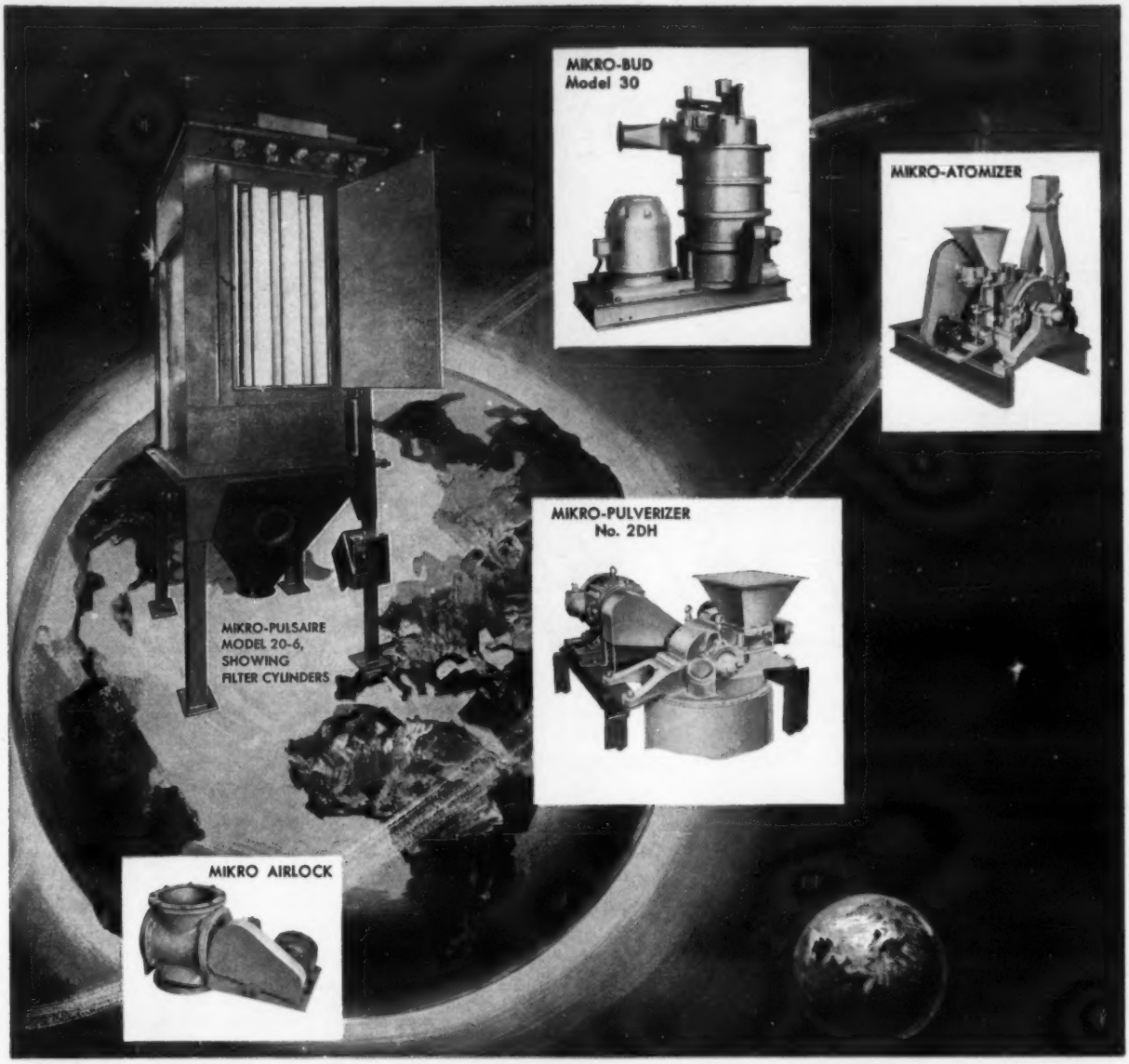
Mr. Spinelli, visiting THE MILLER's office in Minneapolis last week, says that Ocrim was founded in 1945 by Guido Grassi, an industrialist, who has his roots in flour milling. An operative miller himself, his family has owned flour mills in Italy for generations. In 1945 he decided to apply his experience to building flour mills for others. Starting in Italy, he soon extended his service to many foreign countries.

AOM Exhibit Planned

The familiar house colors of Ocrim, pastel green and cream, will be seen by members of the Association of Operative Millers at the 65th annual technical conference and trade show in Minneapolis next May. Exhibit space has already been reserved. And the firm has been a generous contributor to the equipping of the new mill at Kansas State University. «

PICTURED on the left is Giuseppe Spinelli, general manager of Ocrim, Cremona, Italy with Lawrence Jarach, Industrial Overseas Technical Corp.

"Jef Davis Moseby, who's got a one-gallus mill up to Roarin' Creek," said Old Dad Fetchit of the Fish River Roller Mills, "ain't ever run hardly any until here a little while back when danged ef he didn't start runnin' wheat night and day steady. Every crick miller around here was beat out wonderin' how he done it until the revenuers come along an' found out Jef was jes' turnin' the mill to make noise an' cover up a half-barrel licker still he'd got hid away down back an' beyond the wheel house. Jef gave bond, and now he's out an' around cussin the guv'ment an' sayin' ef it's goin to shet off usin' up the by-products, millin' profits is goin' to be cut down to where, goin' on full time, they ain't goin' to be worth hellroom."



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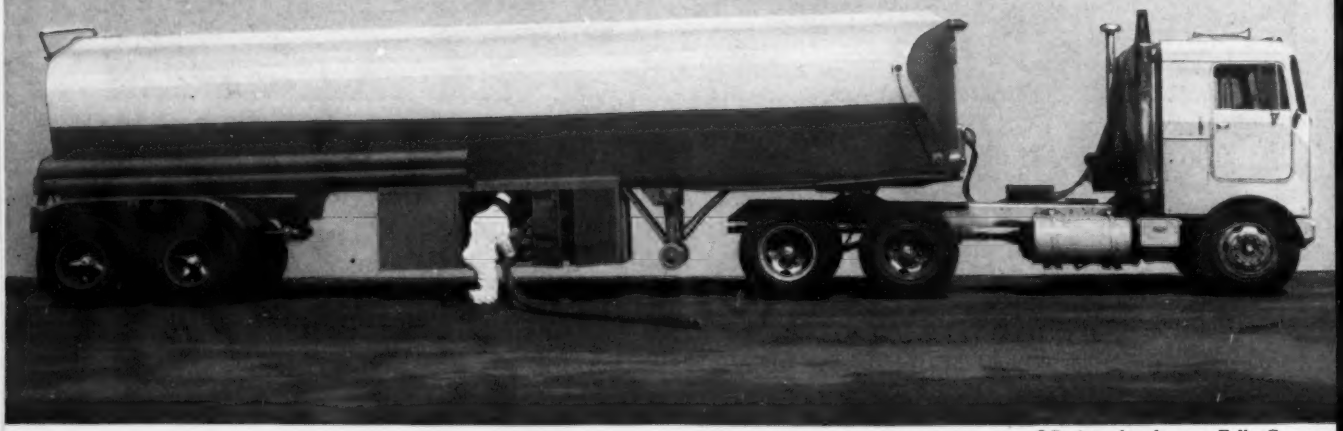

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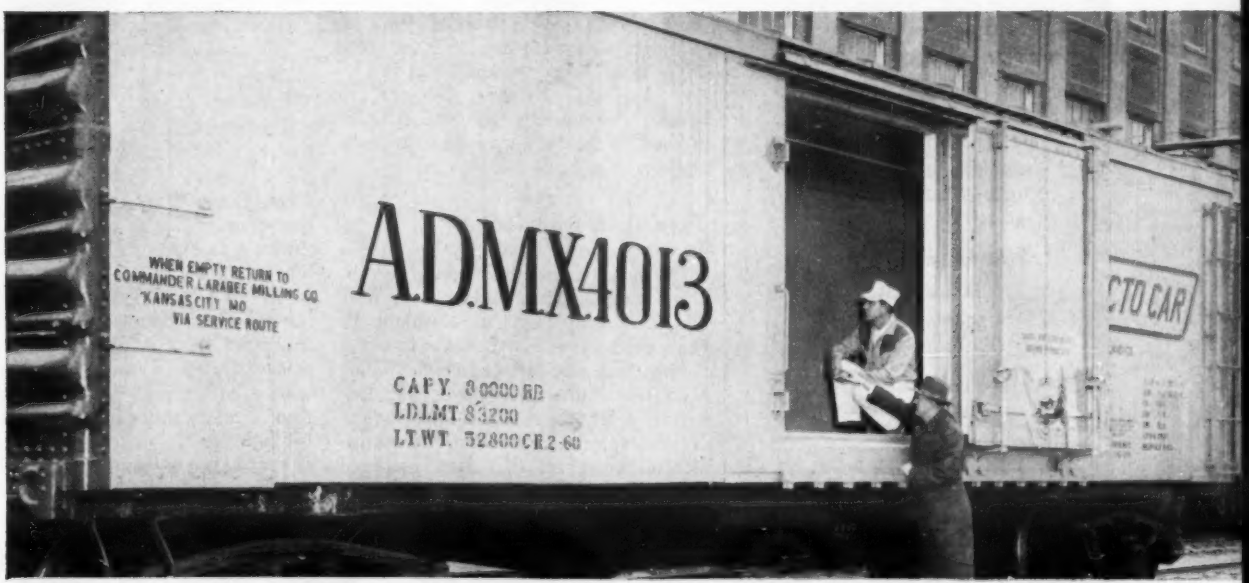

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CANADIAN COMMENTARY

Declining Trend Of Consumption

Declining per capita consumption of wheat in highly developed countries not likely to be reversed. That's the report from the International Wheat Council quoted in "Agriculture Abroad," publication of Canada Department of Agriculture's economics division. Root cause is shift to high protein foods, rising level of consumer income. Population gains may not be enough to prevent gradual falling off of total consumption . . . so says IWC report.

But there's tremendously obvious area for more consumption provided demand can be made effective, says same report. Council acknowledges that solutions of international distribution problems for wheat depend on national policies of governments concerned. Governmental intervention in areas of consumption not nearly so active as in either production or trade, although various programs have been tried. Some governmental measures, such as those dealing with international trade in flour, create rigidities in the wheat trade which tend to hinder its free development, says IWC.

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Pool Elevators' Earnings Increase

Manitoba Pool Elevators completed fiscal year July 31 with combined net earnings of $1,921,968 compared with $1,885,039 year earlier. Figures were presented at 35th annual meeting in Winnipeg. Amount available for allocation to accounts of members is $1,352,272, with balance allocated to reserve accounts. Organization comprises 225 local country elevator associations, one seed association.

Population Stimulant To Farm Production

Estimated increase of about 4 million in Canadian population in next 10 years will provide stimulant to farm production and benefits to retail distribution services, claims C. "Gus" Varkaris, economist with Canada Department of Agriculture. His review of reports on economic prospects indicates, however, that large acreage of agricultural land in central provinces will go out of cultivation before food needs of an expanded population halt—or reverse—this trend.

Agricultural production continues to rise despite abandonment of farm lands or diversion to other uses. Addition of 4 million people by 1970 to Canada's population would probably require equivalent of 600 supermarkets with an annual business volume of about $2 million each. The Royal Commission on Canada's Economic Prospects considers that Canadian farmers will be able to produce the food required . . . forecasts that by 1980 total agricultural output will be half as much again as in 1955.

Wheat, Flour Exports Show Increases

Wheat and flour exports for September, second month of the crop year, hit 29,500,000 bu., boosting two-month aggregate to almost 56,200,000 bu. or 5,600,000 bu. above August-September of previous crop year. September movement included 2,700,000 bu. wheat flour, with the two-month total equivalent to 5,528,000 bu. In the two-month period Canadian flour cleared to 64 different destinations, with U.K. taking equivalent of 1,524,000 bu. as flour. Lebanon took 558,000 bu. and Philippines 559,000 bu. as flour.

During August and September, U.K. imported 18,877,000 bu. wheat, Japan took 10,657,000 bu. and Germany 5,591,000 bu. Other importers taking more than 1,500,000 bu. during the two months were Italy, Belgium-Luxembourg, Netherlands, Switzerland and France.

Comment on Policy Of Wheat Board

Board official has charged as "completely unfair" complaints levelled at the board by London office of McCabe Grain Co. in its weekly report that "board appeared to have withdrawn from export market for barley." Grain firm report went on to state, "We have reached stage when buyers in this country no longer listen to prices of Canadian barley, their prices being completely unrealistic with other origins despite being duty free . . . we cannot help but feel sorry for holders of Pacific barley who will either have to store purchases and wait for a miracle . . . or be hopelessly slaughtered."

Board spokesman said that board had been offering Canadian barley on a competitive basis with U.S. barley at U.K. ports and criticized McCabe letter for not giving analysis of entire picture. He said very little barley was being bought in U.K. at present because its own domestic crop is now on the market and because of wet harvest it was being moved fast as possible into U.K. consumptive channels. «

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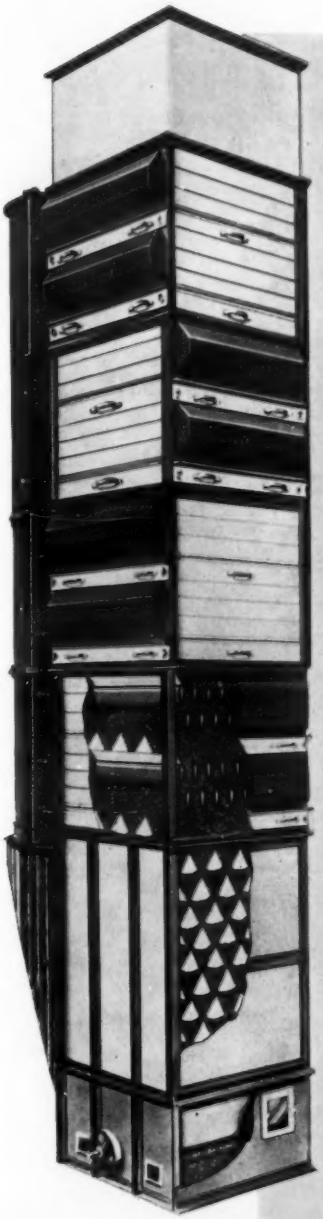
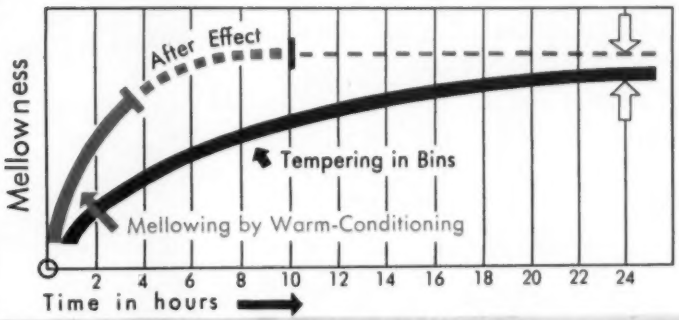
TIME, MOISTURE, TEMPERATURE



influence the conditioning of wheat. Insufficient tempering time can be compensated by increased temperature



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FARINOGRAPH CURVE CHARACTERISTICS OF MILLED FLOURS

By R. K. Bequette, R. B. Potts and C. A. Watson

Reprints of a technical article in which the authors make comparisons of Brabender Rapid Test and Brabender Quadruplex results with those obtained from the Buhler experimental mill. Illustrated with tables and charts **20c each up to 100 copies** larger supplies at reduced price

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Canada's 1960 Spring Wheat Crop High In Grade, Protein, Baking Strength

Canada's 1960 crop of hard red spring wheat rates a "high" in the qualities that make for good baking. That's the latest report from the laboratory of the Board of Grain Commissioners.

The crop, 455 million bushels of it, rates mostly No. 2 and No. 3 Northern.

It's high in protein content, baking strength and supporting value, say the technicians.

Despite a reduction in bushel weight, the Northern grades mill very well and give high yields of good-color flour. And—with so little frost damage this year—bushel weight will be an important grading factor. The crop came in under ideal weather conditions and most of it is dry enough to go into "straight" grades.

Test Samples

Tests made on 6,353 samples of the statutory grades of wheat obtained from 1,739 shipping points in the three prairie provinces show that average protein content is 14.2%, the same as in 1959, and .7% higher than the long term average. Average protein levels are 13.2% for Manitoba, 14.5% for Saskatchewan and 13.8% for Alberta. A large high protein area extends over western Saskatchewan and eastern Alberta; except for the eastern half of Manitoba, which is below-average protein, the remaining wheat-growing areas are average protein.

Average bushel weights for 1, 2, 3 and 4 Northern (wheat cleaned for milling) are 64.5, 62.5, 61.5, and 60.0 lb. respectively, and corresponding protein contents are 13.7, 14.1, 14.1, and 14.8%. There is not much difference in the flour qualities of the first three grades, although there are small consistent trends in flour yield, ash and color as grade goes down.

The flour qualities of No. 4 Northern are particularly good for the grade, but flour yield is lowest, ash is highest, and flour color is not quite so bright. The small difference between No. 4 Northern and higher grades in gassing power reflects soundness of kernels in this grade this year. Baking strength and supporting value are the same for the first three Northern grades; baking strength is higher for No. 4 Northern, in line with its higher protein content, but supporting value is not any better. Doughs handle very well during baking, and there is an upward trend in absorption as grade goes down.

The amber durum wheat acreage has dropped for the third successive year, but higher yields this year have more than offset the reduction. Production is 16.3 million bushels compared with 14.7 million bushels last year. The new durum crop is high in grade (mostly 2 and 3 C.W.) and protein but down in bushel weight. The wheat is quite vitreous, mills well, and gives good semolina yields. Yellow pigment is high. Dough properties and macaroni quality are excellent.

For the three statutory grades (No. 2 C.W. to No. 4 C.W.), bushel weight and percent vitreous kernels both decrease with grade, and differences in protein are comparatively small. Extra 4 C.W. is typically high in bushel

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ANOTHER MILL MODERNIZING PROGRAM...

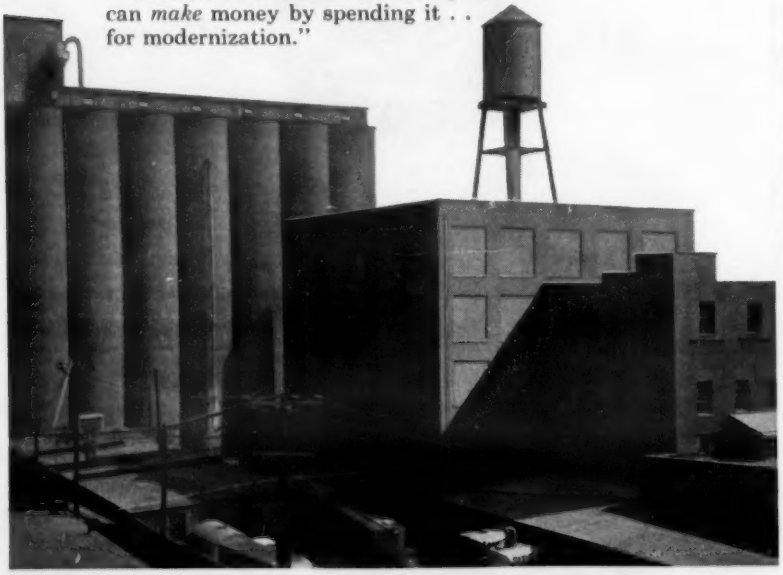
Dixie-Portland Flour Mill Installs Simon-Carter Pneumatic System

"*More efficient milling, with corresponding benefits of greater yield and lower costs*"—this is what pneumatic conveying means at Dixie-Portland's "B" mill in Chattanooga.

A completely new Simon-Carter cleaning house has been installed, incorporating pressure pneumatic conveying and sonic valves.

In the mill, medium pressure suction pneumatic conveying assures a very sanitary operation, cool grinding, and a uniform product.

Investigate the advantages of a Simon-Carter system. You may agree —with Dixie-Portland—that "you can *make* money by spending it . . for modernization."



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weight, kernel weight, vitreous kernels, and protein.

There is not much to choose between the statutory grades in macaroni color. Although Extra 4 C.W. produces a slightly paler macaroni, the color is excellent for the grade. When the new durum crop becomes blended with the carryover, there is every reason to expect that protein content and macaroni color will be maintained and that dough properties will be improved.

Crop Bulletin No. 77 (Canadian Wheat 1960) and Crop Bulletin No. 78 (Protein Survey of Wheat 1960) will be published by the laboratory soon. Bulletin No. 77 discusses the milling and baking qualities of different grades of the hard red spring wheat crop and the semolina and macaroni qualities of different grades of the amber durum crop.

Bulletin No. 78 deals with the protein survey of the hard red spring wheat crop by grades and provinces, and contains alphabetic listings showing protein means and ranges by provinces. A large map showing the origin of samples that fall into different protein ranges will be distributed with the bulletin. «

Diverse Subjects Covered by Flour, Grain Accountants

Members of the Flour Mill and Grain Accountants Assn. should know a lot more about the industries which they serve as a result of their recent meeting in Wichita. They covered subjects as diverse as bulk flour production, the manpower challenge of the 1960's, and bagging.

Dwight Burton, Farmers Commission Co., Wichita, presided as president, while Ross Palmer, Lawrence Photo Supply, Inc., Wichita, ushered in the program topics in his capacity as chairman for that segment of the meeting.

Del Bosley, Kansas Milling Co., Wichita, handled the subject of "Bulk Flour Production Records — What's Our Yield?" He enumerated scales available for bulk production and then opened his subject to questions from the floor.

Walter Gick, U.S. Department of Labor, spoke on "Manpower—Challenge of the '60's."

Other speakers were Robert E. Ulrich, Bemis Bro. Bag Co., on different types of bags available, and P. Milchan, Morrison Milling Co., Denton, Texas, on "Purchasing Procedures, Trials and Tribulations." «

Changes in Houston Sales Management Made by Bemis

Bemis Bro. Bag Co. has made some changes in its Houston sales division, including two promotions and the movement of one veteran to its operations in Peoria, Ill.

Louis Chenault

Louis W. Chenault, sales manager for the Houston sales division, becomes manager of the plant and sales division there, replacing Gordon M. Robb, who becomes manager of the Bemis plant and paper mill in Peoria.

B. E. Rogan, with the company since 1948, succeeds Mr. Chenault as Houston sales manager. The changes were reported by H. J. Wehrenbrecht, director of southern operations.

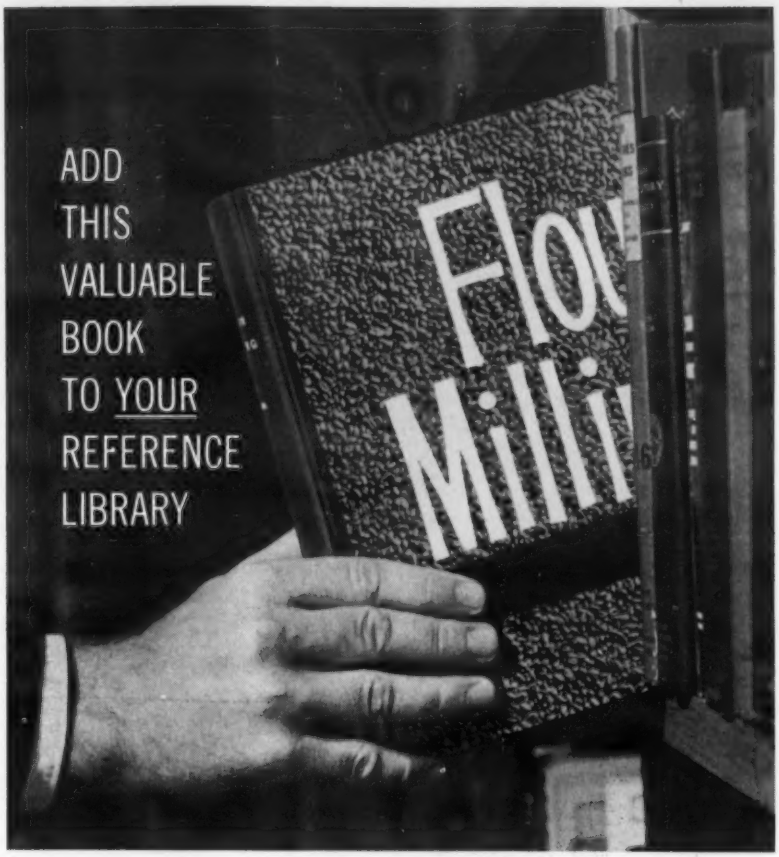
B. E. Rogan

Mr. Chenault joined Bemis as a trainee in the Houston sales office in 1938. He served as a sales representative in the company's Harlingen, Texas, and Houston offices until 1951, when he was made Houston plant merchandiser. He became sales manager in 1955. He attended Memphis State University and was graduated from Southwestern University, Memphis, in 1937.

Mr. Robb joined Bemis 43 years ago as an office boy in Houston. While working during the day, he completed his secondary education at night and continued on with special courses at LaSalle Extension University in Houston and the Institute for Management at Northwestern University in Chicago.

After 10 years in various purchasing and accounting posts Mr. Robb became a salesman in the Houston sales division. In 1943, he became sales manager and, in 1951, manager of the Houston plant and sales division.

Mr. Rogan started with the company as a sales correspondent at the Houston sales division in 1948. He became a sales representative in 1952 and served in that position until his appointment as field sales supervisor early this year. «



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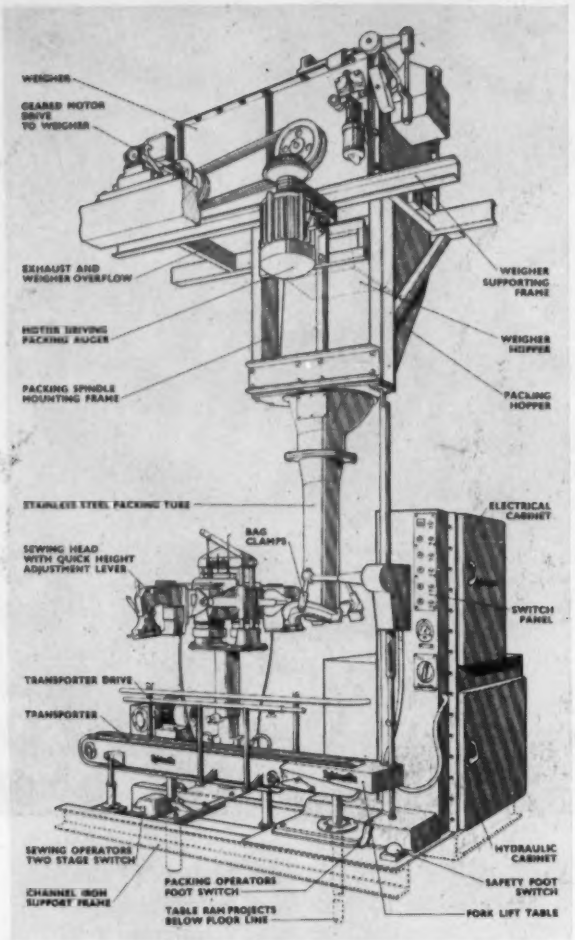


'Help us pack our flour faster!' That's the demand from the industry. Along with it comes insistence on safety. To answer the call, manufacturers are working all the time to improve available equipment. One innovation is being marketed by Thomas Robinson & Son, Ltd. Its development and operation are a tribute to engineering ingenuity.

Speed Is the Key to Flour Packing

"Let's speed up our flour packing—" the cry resounds from mill to mill and back to the manufacturers of packing equipment. It's an ever-recurring request for faster, automated operations to increase efficiency while at the same time cutting costs.

One of the latest steps in this direction is a new, high-speed packer to handle calico, jute and open-topped multiwall paper bags in the 50-150 lb. range. The packer is being marketed by Thomas Robinson & Son, Ltd., the Rochdale, England, engineering firm.

Designed by Robinson's Australian associate company, the packer is electro-hydraulically operated and normally is installed on two floors, the weigher being mounted on the floor above the packing and sewing section.

Packing speeds achieved on recent tests carried out with flour are 8 bags min. with 70-lb. bags and 6 bags min. with 140 lb. bags.

How It Operates

Five manual switches—controlling weigher, packing auger, hydraulic pump, transporter and sewing heads—are switched on, together with the system which feeds the weigher. When the weigher is full and ready to tip, a "weigher full" sign is illuminated on the control panel.

Bags are placed on the packing tube by the operator, who depresses a foot pedal to start the complete automatic packing cycle. The pedal switch immediately operates the hydraulic clamping device for holding and sliding the bag up and down the tube. The weight of the bag is taken on a fork lift table mounted upon a vertical ram.

This table rises to within 1 in. of the packing tube, which ensures that material is packed into the bottom corners of all bags. Packing density depends on the rate at which the ram descends. To enable varying degrees of pack, a loose and tight pack control valve is fitted on the control panel.

Safety Features

Safety is always a prime factor with such equipment—here's how it functions on the Robinson packer:

As a precaution, a red foot-switch is placed adjacent to the packing cycle switch for the operator to return the table at any time during its up stroke with immediate opening of the bag clamps. No resetting is necessary after the table has returned to the bottom of its stroke.

Electrical interlocking also is incorporated to prevent the packer from operating if the following conditions occur:

- Weigher not full
- Weigher pan door remains open
- Stoppage of main motor
- Fork lift table not seated correctly at the bottom of its stroke

Regarding feed, when the geared motor of the weigher is energized, the

material to be weighed is fed into a weigh pan until 80% of the full load is delivered. A mechanism then operates and energizes two thrusters, thereby closing a valve and reducing the feed to a trickle until the weighment is complete. An automatic switch then operates and immediately applies the brake.

The auger packing section is situated below the weigher and suspended from the weigher frame. Within the stainless steel packing tube, which is changed easily to accommodate different bag sizes, a continuous packing auger runs on ball bearings and is driven through a hydraulic fluid coupling by a 15 h.p. motor. The function of this coupling is to slip when peak load is reached, thereby taking the packing strain off the bags and avoiding bursts. The first surge of material from the weigher also is cushioned by this coupling.

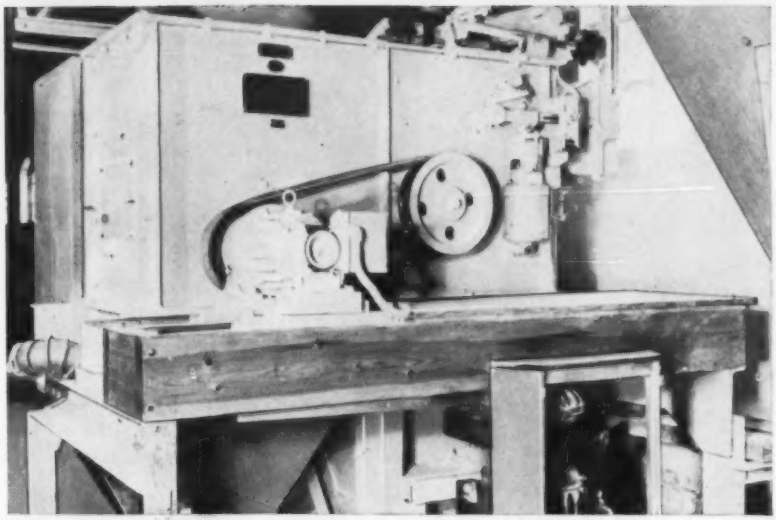
For uniform packing, actual packing or "lying" of the material is done by a special impeller with two wings of aerofoil section, which is mounted at the end of the auger so that no unpacked area exists under the auger spindle end. This ensures a more uniform density and gives a bigger lap for sewing.

Sewing Equipment

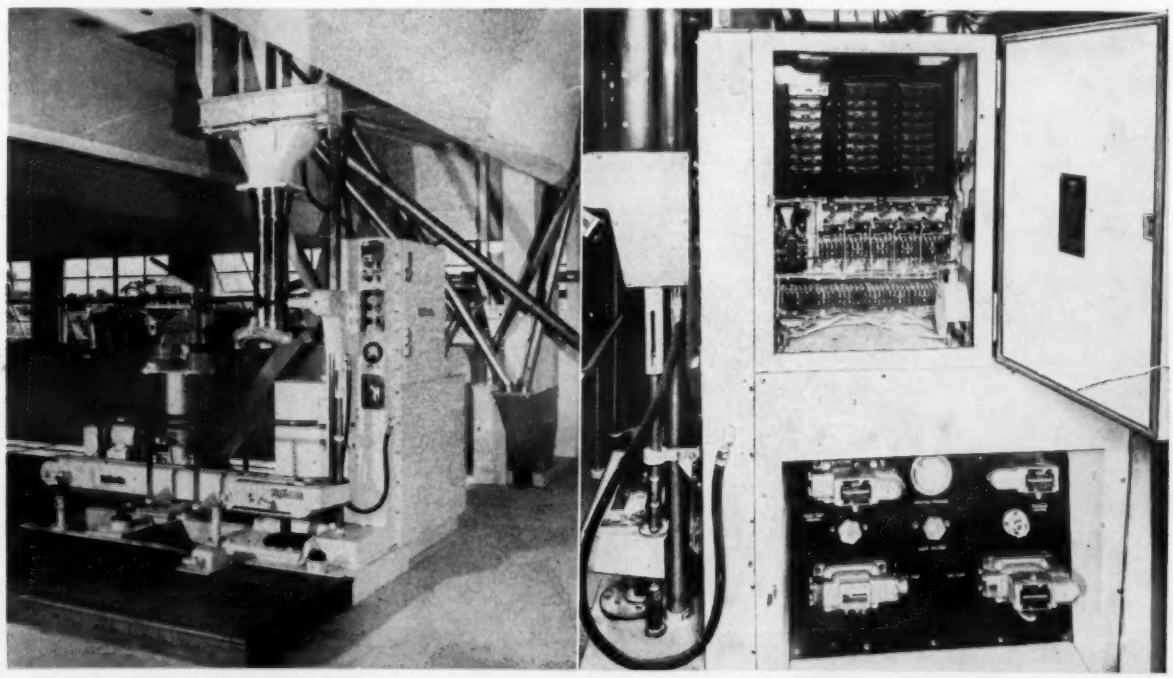
Two robust sewing machines, with independent 1¼ h.p. motors, are mounted on a ball thrust turret with a quick adjustment lever. The machines are arranged back-to-back on the turret so that broken needles can be replaced from the back of the packer without interfering with the sewing operator, simply by swivelling the turret. A power plug and manual switch are provided to enable the spare machine to be tested without loss of production.

As for control gear, the control cabinets are at the rear of the bag clamp shaft. The lower cabinet houses a hydraulic oil tank of 32 gal. capacity and a hydraulic pump directly coupled to a 5 h.p. motor. All electrical switchgear is enclosed in the dustproof top cabinet.

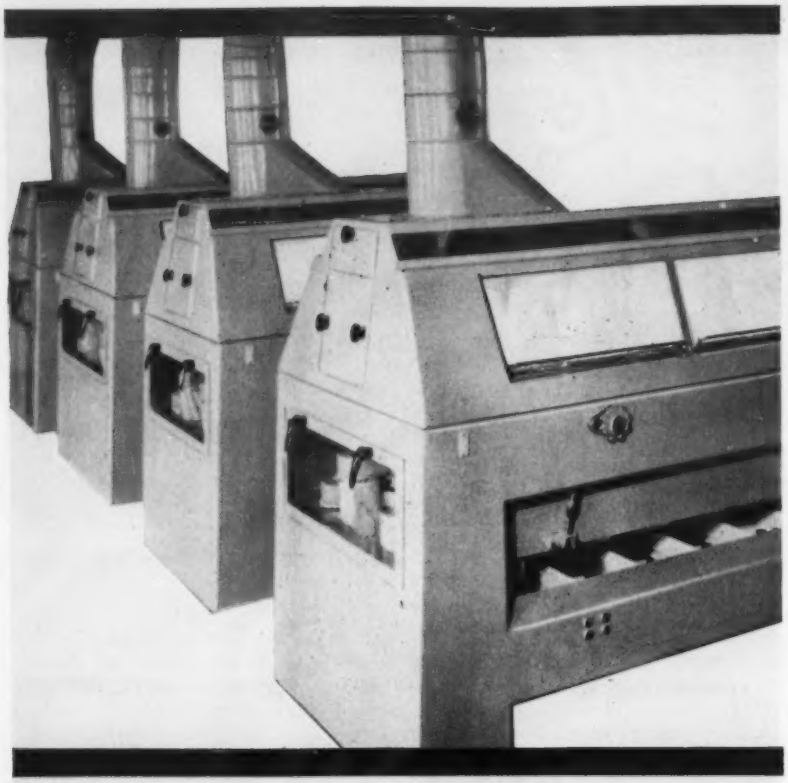
Solenoid-operated hydraulic pilot valves are used to actuate the main hydraulic valves for the bag clamps and main table ram, thus eliminating intricate mechanical linkages. Only a small quantity of fluid is used for each movement, and with hydraulic fluid being incompressible, the operation is instantaneous and positive. ∝

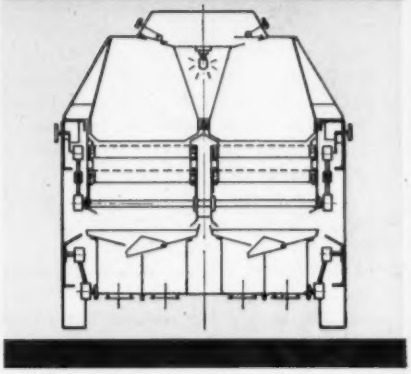


THE ROBINSON weigher with de-aerating conveyor feed above it is shown here. The drive to the packing auger is below the weigher drive.



THE ROBINSON high-speed packer, at the left, is handling the entire 17,250 lb. per hour output of a mill in the Philippines in 50 lb. calico bags, employing only two men to a shift. At the right is shown the neat arrangement inside the electrical cabinet (top) and hydraulic cabinet (bottom).





1 Adaptability to any plant, high yield, exceptional efficiency in cleaning, better use of air aspiration, excellent quality of finished products, easy control and excellent sanitary conditions are the most evident advantages of the SMD middlings purifier.

2 Double or triple set of four interchangeable sieves arranged in two or three layers.

3 Air chamber subdivided into compartments with micrometrical regulation by means of 26 independent slide valves.

4 Collecting conveying channel equipped with 24 swivel flaps for the proper distribution of the stock, and 5 double-bottomed channels for conveying refuse toward the head.

5 Expansion chamber for the recuperation of heavy particles with an internal 12-volt lighting system.

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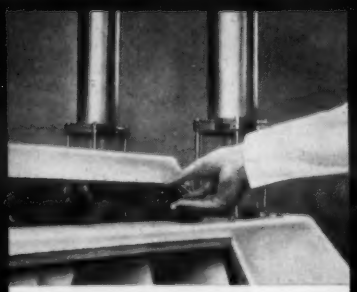
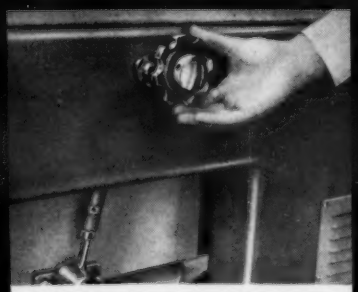
MULTIPLE MIDDLINGS PURIFIER

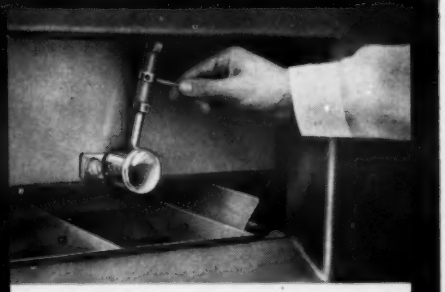
TYPE SMD



Adjustment of an aspiration valve



Adjusting the slope of the sieves even when the machine is running



Transverse adjustment of the sieves

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Insect-Free Grain—A Vital Goal

If Grain in Storage Can Be Freed of Contamination the Flour Miller Will Benefit in His Operations

By RICHARD T. COTTON

EVERY flour miller dreams that someday the grain he converts into food for human consumption will have long-range, permanent freedom from insect contamination.

Richard T. Cotton

The ideal would be a protectant lasting months—even years—without affecting the vital, life-giving factors of the grain itself.

Well, the miller can take heart that his dream has a hard core of fact around it, and the scientists are working diligently to bring it down to earth where they may put it to good use.

The protection of grain in storage from insect attack is one of the big problems now confronting farmers, grain dealers and government officials. The flour miller is equally concerned, since he must obtain supplies of grain free from insect contamination to produce flour of the high standard required by public demand and pure food laws.

In earlier years, when huge surpluses of grain were unknown, long time storage of grain was seldom necessary. The grain dealer was concerned mainly with maintaining grain in sufficiently good condition to pass inspection under the prevailing grain standards. An occasional fumigation could be relied upon to reduce the count of live adult insects to avoid a notation of "weevily grain."

Fumigants, when properly used can be relied upon to give an immediate kill of insects in stored grain. However, they do not afford long time protection to grain in storage. For this reason, and to meet needs of the present situation, investigators have revived their interest in the use of so-called "grain protectants," which will remain effective for months or even years without affecting germination, food value or milling qualities.

A grain protectant is any substance which is mixed with grain to prevent attack and subsequent infestation by insects. It can be applied in the form of a dust or spray.

The use of dusts for the preservation of grain from insect attack originated many thousands of years ago when primitive man established the custom of storing grain in holes dug in the ground. Layers of sand, dust or ashes used to cover the grain served as simple barriers against insects and other pests. Mixing the grain with such materials was a logical development from this practice.

To the present day peasants in Iran harvest wheat with a sickle or by pulling the wheat plants out by the roots. Later, when the wheat is dry, the plants are spread in a thin layer on the ground. Oxen, drawing a contraption having small wheels with irregular rims, trample the wheat until the grain is removed from the heads.

The straw and the grain are then thrown to one side and the process continued until all the grain is threshed. Men armed with pronged wooden forks toss the threshed grain into the air, allowing the wind to blow the straw and chaff away. During this process the grain becomes thoroughly

A typical experience in the work-a-day lives of thousands of industries.
DOGGONE IT, PETE, THIS HAS GOT TO STOP!
PLANT MANAGER
. . . just came from the bag-filling department . . . Not a man wearing a respirator.
I'm not surprised, Jim. The men would rather breathe dust than wear heavy old respirators.
I know it. But I'm supposed to enforce safety rules. Oh, for a light, comfortable dust mask!
Seen Purchasing yet? They're up on new developments.
Here's what you want, men—The Flex-A-Foam Dust Mask—light as a feather!
PURCHASING AGENT
It's sure light and comfortable, but can it do a man-size job?
It should. It filters non-toxic dust particles 100 times smaller than you can actually see.
Order a trial dozen, Bob. Maybe they'll wear these without continual prodding.
LATER
They're glad to wear Flex-A-Foam Dust Masks. Our troubles are over!
You're right! We should now equip the entire plant!
(quantity prices as low as $1.10)
Send Today
$1.45
(Industrial price only)
Try low-cost FLEX-A-FOAM and judge proof by performance.
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Westlake, Ohio

Wanted: Clean Grain (continued)

mixed with sand. Although the grain is screened through small hand screens, the finished product usually contains one-half to several percent sand and dirt.

Quite similar methods are still practiced by small land owners in Mexico. The practice of mixing sand with grain was also practiced by the ancient Egyptians and by the American Indians who had the habit of burying corn in curious sand mounds.

Many types of dusts have been tried from time to time as grain protectants. Of these, mineral dusts have been found quite effective for the purpose. Silica in one form or another has been used for this purpose in many countries up to the present time. Crystalline silica in the form of finely ground quartz dust was marketed under the name of "Naaki" in Germany and "Neosyl" in England.

Silica is the most abundant constituent of the minerals and rocks that make up the crust of the earth. Many clays and diatomaceous earths contain high percentages of silica, and a number of them in finely divided form have been found effective in protecting grain from insect attack. Unfortunately free silica in finely divided form constitutes a silicosis hazard to workmen, and for this reason, its use for treating grain was prohibited in Germany in 1941.

In addition to silica dusts, a number of other mineral dusts have been marketed under proprietary names for use in protecting stored grain from insect attack. Rock phosphate in admixture with sulphur was sold for this purpose in Egypt under the name of "Katelsousse"; anhydrite (anhydrous gypsum) in England under the name of "Fygran" and hydrated ferrous phosphate in Russia under the name of "Vivianite." Certain oxides of magnesium and aluminum also have been advocated for the purpose.

A long list of chemically active dusts has been recommended and tested as grain protectants in addition to the chemically inert dusts mentioned. These chemically active dusts cause the death of insects by their poisonous action. They are effective in low concentrations and are not affected by moisture content of the grain. Typical of chemically active dusts are DDT and lindane. Although used to a limited extent in some foreign countries, their use as grain protectants is prohibited in the U.S.

Inert Dusts

Inert dusts cause the death of insects by promoting the rapid loss of body moisture. Insects which live in stored grain depend upon their food supply for moisture needs.

Unless the grain is fairly high in moisture content, they cannot readily replace water lost through the action of inert dusts, and death from desiccation quickly follows.

Just how dusts cause this loss of moisture remained a mystery until a few years ago. Briscoe and his associates in England reported that any hard mineral, when ground sufficiently fine, is moderately effective in killing grain-infesting insects regardless of its chemical properties.

In general, dusts with a hardness below 3 on Moh's scale are ineffective. As hardness increases from 3-6 effectiveness increases rapidly. In the range from 6-10 in hardness the increase in effectiveness is not so pronounced, but is still significant.

These workers also observed that as dust particle size diminishes from 10 microns to 1 micron, effectiveness increases. For effectiveness, the particles should be mostly under 10 microns in diameter, preferably with a large proportion by weight in the range of 1-5 microns.

The cuticle, or outer layer of the body wall of grain-infesting insects, has a waxy coating which renders it impervious to water and permits retention of water necessary to sustain life. In attempting to explain the mode of action of inert dusts in promoting water loss from dusted insects, Briscoe and his co-workers suggested that possibly the waxy coating is attracted away from the insect body wall to cling to the dust crystals, thus leaving bare patches on the insect epicuticle, through which the body water evaporates.

This theory was later disproved by Wigglesworth, another British scientist. He demonstrated that chemically inert dusts cause the desiccation of insects by getting between the surfaces of the cuticle that rub against each other, destroying its impermeability by abrading the waxy coating, thus causing a great increase in transpiration through the cuticle.

In dry environments this loss of water is quickly fatal. However, if the insect is surrounded by moist air, impermeability of the cuticle can be restored.

For this reason, chemically inert dusts are not entirely effective in protecting high-moisture grain. Their effectiveness declines as the moisture content of the grain increases over 12%. In dry grain many mineral dusts, with a particle size of 1 micron or less, are effective when used at the rate of 1 part per 1,000 parts by weight. Unfortunately, inert dusts cannot be used to treat commercial grain stocks, because grain so treated would be classed as "limed" and would be down-graded to "Sample Grade." They could be used for the protection of feed grains on the farm, or other grains that would not enter commercial channels.

At present the number of protect-

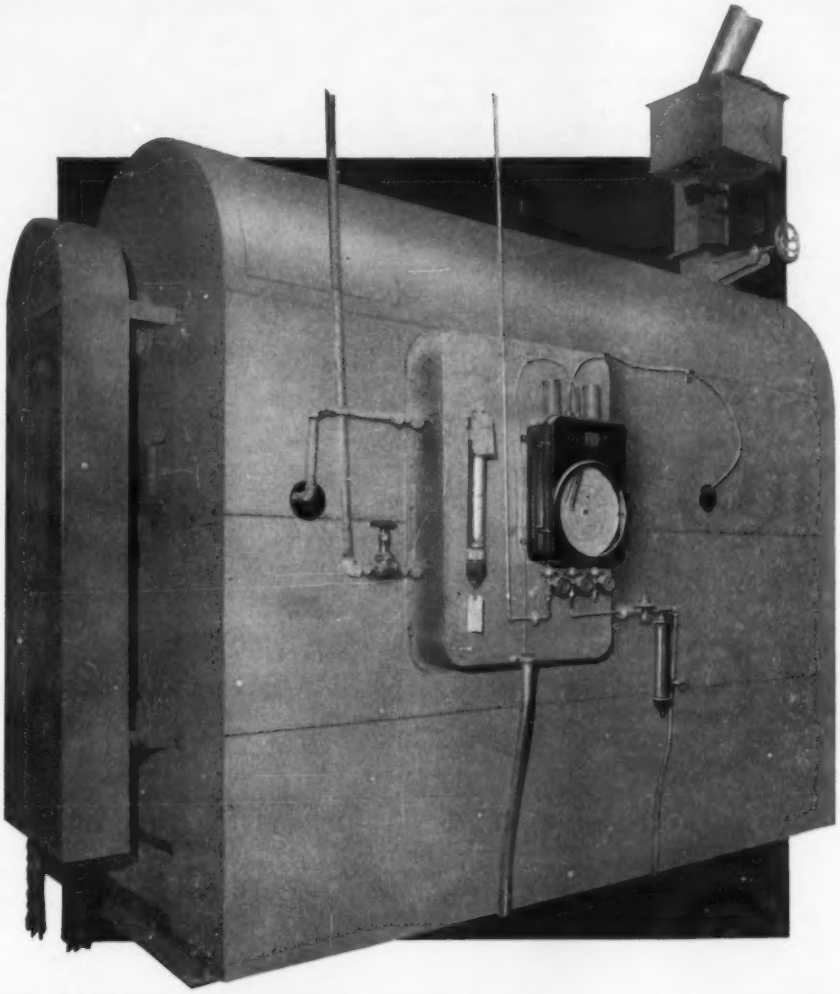
Latest Rulings in Labor Relations
MAY EMPLOYER DISCHARGE WORKERS HIRED DURING A STRIKE ?
THANKS FOR HELPING US DURING THE STRIKE, AND HERE'S YOUR FINAL CHECK!
WHAT ?
AFTER RISKING MY LIFE TO WORK HERE, I GET THIS ?
SORRY, BILL!
THIS MAN HAS ONLY A FEW WEEKS SENIORITY!
I WANT DAMAGES !
ARBITRATOR'S DECISION
YES, STRIKE REPLACEMENT WORKERS ARE NOT ENTITLED TO PREFERENTIAL TREATMENT
Based on a 1960 Minnesota Decision

Take the guesswork out of WHEAT CONDITIONING

with a

FORSTER

system



- Increase patent extraction
- Improve flour color
- Reduce fragmentation count
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- Save roll corrugating costs
- Eliminate loss of time in mill-mix changes
- Make wheat millable

Use FORSTER for *automatically controlled* wheat conditioning. Control moisture to within 1/10 of 1%. Maintain optimum moistures in the low grades and in your feed. Assûre product uniformity . . . better yield . . . lower ash . . . improved baking qualities. Make a better product—and more profit for your mill. Use a FORSTER wheat conditioning system. Capacities from 30 to 500 bushels per hour. Call or write today for complete mechanical details and prices.

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ADA, OKLA FEderal 2-6020

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Please send complete details on Wheat Conditioner

Name .....

Company Name .....

Address .....

City ..... State .....

NWM-11

Grain Needs Protection (continued)

ants approved for use by the Food and Drug Administration are limited to (1) A mixture of pyrethrins and piperonyl butoxide and (2) malathion. Both insecticides are available in dust or spray. Grain dealers prefer a spray, since it is cleaner and does not add to the amount of dust normally present.

Dusts or sprays can be applied to grain as it is being loaded into storage bins from trucks, or as it is being moved by augers from one bin to another. They may also be applied in the combine hopper, so that by the time the grain is placed in storage the protectant and grain are thoroughly mixed. Uniformity of application and distribution is desirable.

Pyrethrin formulations: For wheat or other small grains likely to be down-graded if inorganic dust carriers are used, a dust with a powdered wheat base containing 1.1% piperonyl butoxide and 0.08% pyrethrins should be used at a dosage of 75 lb. per 1,000 bu.

For feed grains to be used on the farm or for seeds, a dust with a talc base containing 1.0% piperonyl butoxide and 0.06% pyrethrins can be used at the rate of 100 lb. per 1,000 bu.

For use on seed grains where there is the possibility that the treated seed may be used in the preparation of foods, or in milling feeds, a pyrethrum slurry formulation is available. It is prepared as a wettable powder consisting of 0.75% pyrethrins and 10.0% piperonyl butoxide in an inert inorganic carrier. It is applied at the rate of 1 lb. per 100 bu. seed.

Two types of synergized pyrethrum spray formulations are available commercially. One is in the form of an emulsifiable concentrate to be diluted with water; the other contains a solvent as a carrier and comes ready prepared for use. Both types contain pyrethrins and piperonyl butoxide in the ratio of 1 to 10. Recommended dosages are 2 gal. of the solvent base spray per 1,000 bu. and from 4 to 5 gal. of the water base spray. At these dosages protection will last for one season. FDA has set a tolerance of 3 ppm for pyrethrins and 20 ppm of piperonyl butoxide on treated wheat.

Malathion: For the treatment of wheat and other small grains it is recommended that malathion be used as follows: One pint of the 57% premium grade emulsifiable concentrate in 2 to 5 gal. water per 1,000 bu. grain or as a 1% premium grade malathion wheat dust at 60 lb. per 1,000 bu. The treatment is not recommended for grain with a moisture content above 13%.

Surface treatments against the Indian meal moth: As a surface treatment to protect grain in storage against invasions of the Indian meal moth or other moths apply (1) Premium grade malathion 57% emulsifiable concentrate to the surface of clean, uninfested grain at the rate of ½ pint in 1 to 2 gal. water per 1,000 sq. ft. of surface grain or (2) malathion 1% premium grade wheat flour dust at the rate of 30 lb. per 1,000 sq. ft. or (3) pyrethrins 0.3% by weight, synergist 3.0% by weight and deodorized kerosene 96.7% applied at the rate of 1 pint per 100 sq. ft. FDA has set a tolerance of 8 ppm of malathion in stored wheat, resulting from treatment with malathion grain protectants. «

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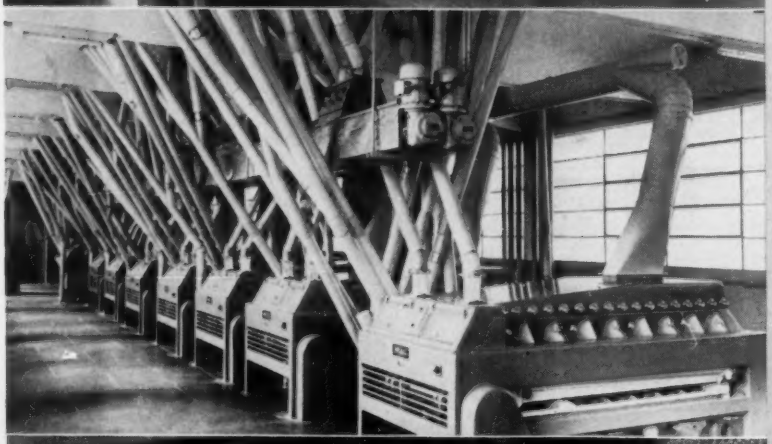
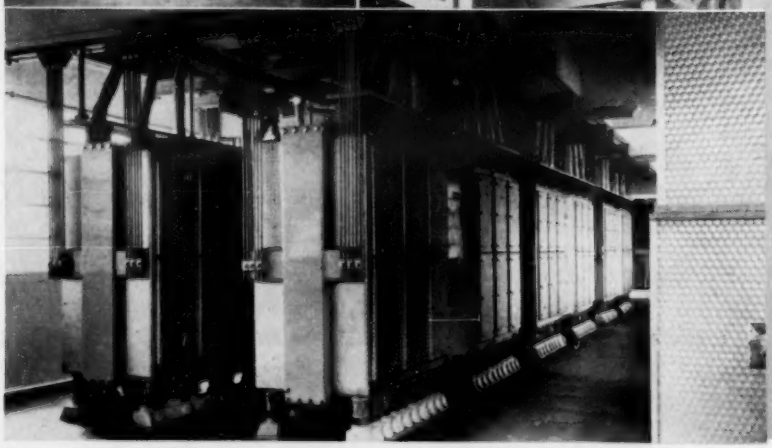
A Milling Technology Feature

New Mills from Rio

Brazil





The road to Rio will never look the same again, thanks to the march of progress which has brought a towering, multi-story flour mill to completion along its right-of-way.

Designed and all its equipment manufactured by MIAG of Braunschweig, West Germany, the new mill has been started in Juiz de Fora, a city on the road from Rio de Janeiro to the new capital city of Brasilia. It has a capacity of approximately 2,500 cwt. daily.

Adjacent to the mill is a grain elevator with approximately 150,000 bu. capacity.

Production results shortly after start up of the mill have fulfilled the expectations of the mill owners in regard to capacity, yields and product qualities.

The top photograph at the left shows the flour mill building. The mill is over the packing and warehouse floors. In the center photograph is the roller mill floor with MIAG type HN mills and automatic servo controls.

The third photo from the top shows the purifier floor with MIAG type 40 dk all-metal purifiers and all-metal prefab spouting. In the lower photo can be seen the six section drawer type sifters with metal covered housings.

to the Italian Tyrol

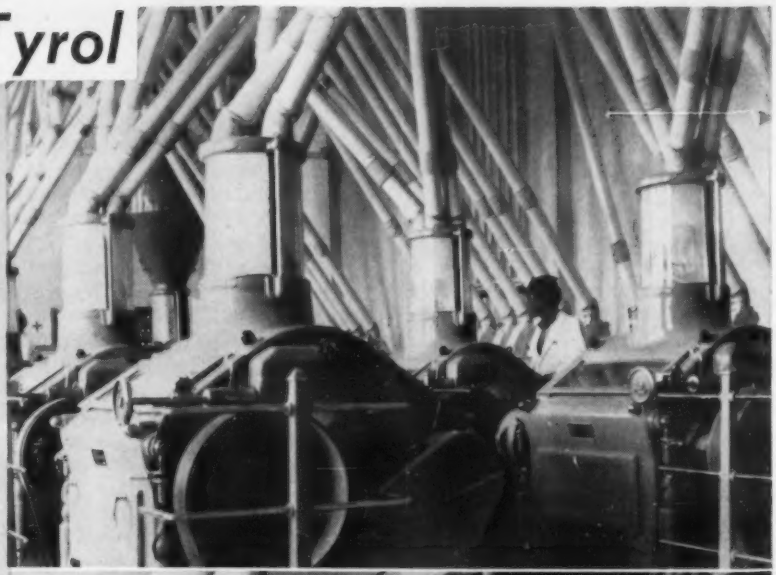
Italy

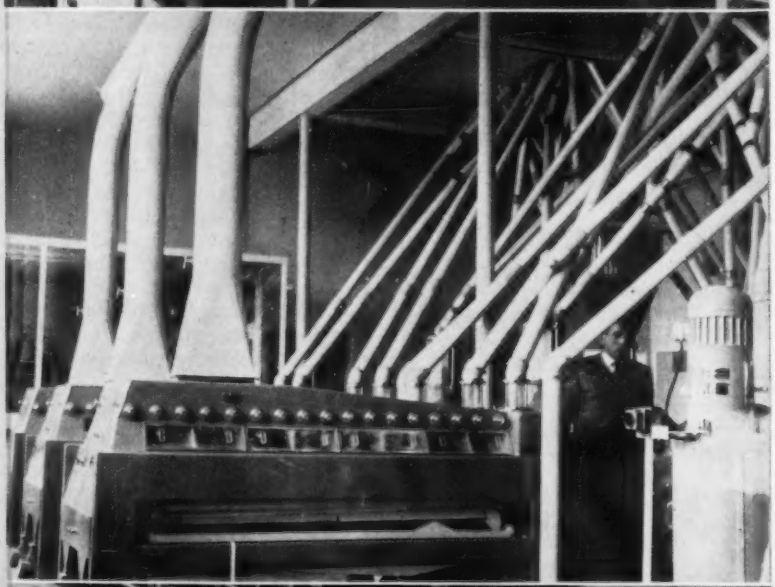
Italy's South Tyrol now hums with the activity resulting from completion of a new flour mill of 800 cwt. daily capacity at Meran. The versatile operation produces not only bakery and family flours but also semolina for a macaroni plant in the same building.

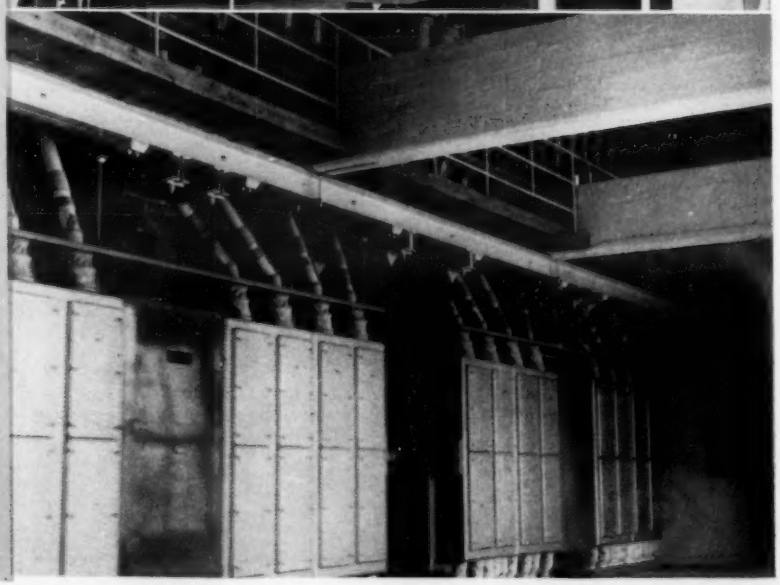
The flour mill itself is arranged on two floors over the bulk storage bins. Roller mills, all-metal purifiers and bran finishers are on the lower floor, with the sifters on the upper floor. A mezzanine over the sifters allows good access to the pneumatic mill conveying system. The bulk storage plant has a capacity of approximately 7,000 cwt., or almost nine days of mill capacity.

The Meran mill, like the Brazilian operation on the lefthand page, was engineered and the equipment manufactured by MIAG.

In the photographs at the right, the top one shows the roller floor with MIAG servo roller mills automatically controlled. (Flour pick-up conveyors are in back, arranged for easy access.) In the center photo are all-metal purifiers with individual drives. (A vertical bran finisher is at the right. In the lower photo is the sifter floor, metal-clad, each with eight sections.







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Canadian Baking Executive Hits Back With Statistics at Critics of Bread

Criticism of the quality of Canadian bread voiced in some parts of the country is certainly serving no good purpose, and one of that country's leading baking executives has spoken forthrightly on the subject.

Addressing the annual business meeting of the National Council of the Baking Industry in Toronto, D. A. Ross, president, pointed out that Canadian consumption of bakery foods is holding its own. In fact, he reminded the meeting, it is beginning to show an increase.

"Per capita consumption figures for bread, indicating that Canadians are eating somewhat less of it than during the immediate post-war years, do not take into consideration the marked increase in consumption of bread rolls of all kinds," stated Mr. Ross. "From our studies we know that many families are changing their bread eating patterns to include rolls for breakfast and dinner, and particularly for between-meal snacks.

"We also know that the majority of people who buy white bread prefer it in its present form. They want it fresh, sliced, convenient. The minority groups who prefer a crusty, flavorful, unsliced loaf can obtain it from any one of the many specialty bakers. These specialty bakers, who are producing first-rate variety products, can introduce into their bread production, the individual attention and home-made touch that is not possible in a larger operation."

Mr. Ross stressed the fact that the baking industry is a major purchaser of other foodstuffs, particularly wheat flour and cereal products. Yet, unlike a multitude of other Canadian food producing groups, this industry is receiving little or no encouragement from government and other outside groups in terms of grants to assist in the promotion of these cereal foods.

Limited Funds

"With limited funds available, we have been carrying out a national program of information and public relations for a number of years, attempting to demonstrate to Canadians the nutritional value of bakery foods. The program has been effective, but there is still a great deal to do in a wheat-producing country such as Canada. Teachers, school children, public health educators and many other segments of our population could be reached through a more extensive program of information on bread and bakery foods," added Mr. Ross.

"It is discouraging for Canadian bakers to experience unfounded criticism which does nothing but dissuade people from eating bread, and from trying the new varieties which are constantly making their appearance in the market place.

"While we hear criticism of our Canadian-made bakery products, it is interesting to note that many bakers in the U.S. extol the quality of bread made in Canada. Some feel that if Canadian formulae for making bread were available in the U.S. their per capita consumption of 90 to 92 lb. —which is somewhat less than ours— could be boosted," he stated.

Mr. Ross touched upon the great strides made by the baking industry as a whole in the field of safety. "Today the baking industry is largely mechanized, and bread is transported, not only house-to-house, but in great trucks to distribution centers. The driving accident rate in the industry is low indeed, and every baker is strongly emphasizing to his drivers the continuing need for accident prevention.

Attending the one-day business meeting were key representatives of the industry from the Atlantic Provinces, Quebec, Ontario and other parts of Canada. «

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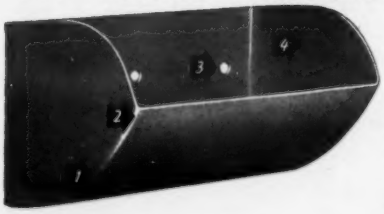

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Bright New Fields for Cereal Products

Antibiotic Fermentation Is Putting to Work Such Raw Materials as Glucose, Starch, Corn Steep Liquor, Hydrolyzed Corn and Wheat Gluten

By DR. PING SHU and MARJORIE A. DARKEN

NEW applications for cereal products undreamed of only a few short years ago are coming to the front all the time. One of these areas —with a vast potential for usage—is the antibiotic fermentation industry.

The fact that antibiotic fermentation did not exist until the breakthrough with penicillin in 1943 is a resounding commentary on the express-speed advance of science. Now it can be stated that cereal products are involved in the production of almost all the well known antibiotics.

The phenomenon of antibiotics was first demonstrated in the 19th Century but remained a subject of academic interest until the beginning of World War II when Chain, Florey and Heatley (6) reinvestigated Fleming's earlier findings on penicillin (12) and recommended it for medical use. This antibiotic was found to be highly active against organisms associated with war injuries. Because of the tremendous demand for war time use, research and development on penicillin technology was greatly accelerated.

In 1944 streptomycin was discovered (29). It was found to be somewhat toxic but of particular efficacy in treating tuberculosis. In 1947 and 1948 the broad spectrum antibiotics, chloramphenicol (9) and chlortetracycline (7) were announced. These are active against wide varieties of pathogenic organisms of both the gram-positive and gram-negative types.

In later years additional major antibiotics such as oxytetracycline (11), erythromycin (24), neomycin (34), novobiocin (15) and kanamycin (31) were introduced. In addition, a number of less important but useful antibiotics have been reported. The antibiotics which are available commercially in the U.S. are presented in Table I. It is estimated that over 400 antibiotics have been announced, but relatively few are of practical significance.

Dr. Ping Shu

Marjorie A. Darken

The structures of these compounds differ widely. They vary from polypeptides to polycyclic compounds and from relatively simple molecules to macrolides. They may show resemblance to well known biologically active substances in part or as a whole. The structural formulae for a number of well known antibiotics are shown in Fig. I.

Usefulness of antibiotics is not confined to the pharmaceutical field. These compounds are used as growth promoting agents in animal husbandry and for control of food spoilage and plant diseases. Table II lists the antibiotics most commonly employed for such purposes. In this country combined usage of antibiotics for non-pharmaceutical applications totals approximately one-third of the total annual production.

Methods Used

Methods used in large scale commercial fermentation of antibiotics have been improved enormously since the introduction of penicillin. At the beginning of this era penicillin was produced by surface culture in milk bottles; now it is processed in 30,000 gal. fermenters. The yield also has been increased several hundred times and the cost of production correspondingly reduced.

The general procedure used in antibiotic production is summarized in the schematic diagram shown in Fig. II. Maxmium production of an anti-

A multi-million dollar business—that's the antibiotic fermentation industry—and cereal products serve as a major source of its raw materials. This "war baby" industry is more remarkable for not even being in existence until penicillin was introduced in 1943. Since then there have been momentous changes, including the concept in chemotherapy of infectious diseases. Along with this has come the shift in emphasis in research and development in the fermentation field from industrial to fine chemicals, and from major but simpler metabolites to minor complex by-products. The few antibiotics which may be purchased under various trade names represent only a small fraction of the total antibiotics discovered. These compounds differ widely from one another in their structure and mode of action. Successful production of any antibiotic depends upon the strain of the organism selected, composition of the medium or raw material employed, and fermenter conditions. Influence of the medium may be exerted indirectly through regulation of growth and shifting metabolic pathways of the organism and/or directly by supplying ready-made precursors for the synthesis of the antibiotic. Starch, cerelose, corn steep liquor and soybean meal are major raw materials in this industry. This article on the subject is published in conjunction with the American Association of Cereal Chemists.

Numbers in parentheses refer to bibliography at end of article.

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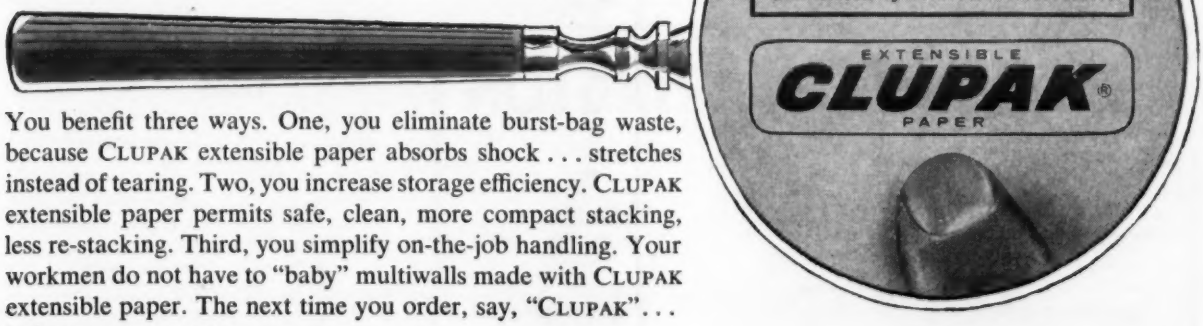

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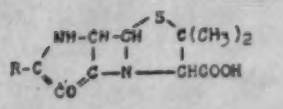
FIGURE I

Structural Formulae of Antibiotics



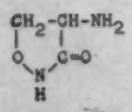
P: R = $CH_3-CH_2-CH\ CH-CH_2$

G: R =

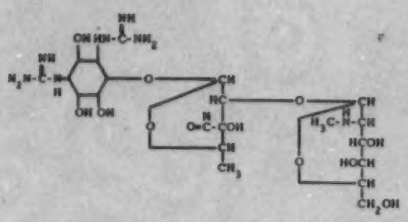
K: R = $CH_3(CH_2)_6-$

X: R =

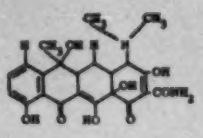
Penicillins



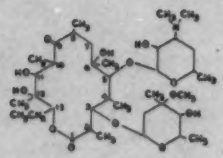
Cycloserine



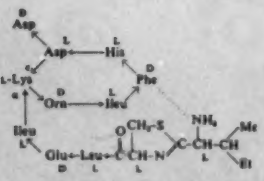
Streptomycin



Tetracycline



Erythromycin



Bacitracin A

biotic is dependent on the strain of the organism selected, the growth medium chosen, and the physical conditions such as aeration, agitation and temperature, maintained during fermentation.

Most antibiotics in commercial production are produced in yields ranging from 1 to 5 grams per liter of the fermentation broth (10). These yields represent a conversion of approximately 1% to 5% of the organic nutrients to antibiotic. The fermentation usually exhibits a characteristic change in medium pH, rate of nutrient utilization, mycelial growth, and antibiotic accumulation.

The general pattern of these changes—the biochemical change pattern—should be reproducible when the process is under rigid control. Information of this type is useful in process development and production control. An example of a biochemical change pattern is shown in Fig. III.

Primary requirements of a good fermentation medium are that it be able to support sufficient growth of the organism and to create a fermentation environment so that maximum antibiotic yield may be obtained. In general, antibiotic production does not begin until maximum or near maximum growth of the cells has taken place. This is achieved by using suitable proportions of various carbon and nitrogenous substances, trace metals, and growth factors. Precursors are often incorporated in the medium when economically feasible. Economic

TABLE I

Antibiotics Sold in the U.S.

Amphotericin B	Nystatin
Bacitracin	Oleandomycin
Carbomycir	Oxytetracycline
Chloramphenicol	Penicillins
Chlortetracycline	Polymyxin B
Cycloheximide	Ristocetin A & B
Cycloserine	Streptomycin
Dihydrostreptomycin	Tetracycline
Erythromycin	Tyrothricin
Kanamycin	Vancomycin
Neomycin	Viomycin
Novobiocin	

TABLE II

Antibiotics Most Commonly Used in Non-Pharmaceutical Applications

Usage	Antibiotics
Animal feed supplement	Chlortetracycline, oxytetracycline, streptomycin, penicillin, bacitracin.
Control of food spoilage	Chlortetracycline, oxytetracycline
Control of plant disease	Streptomycin, cycloheximide

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*Report No. 6 in the Household Food Consumption Survey of 1955.

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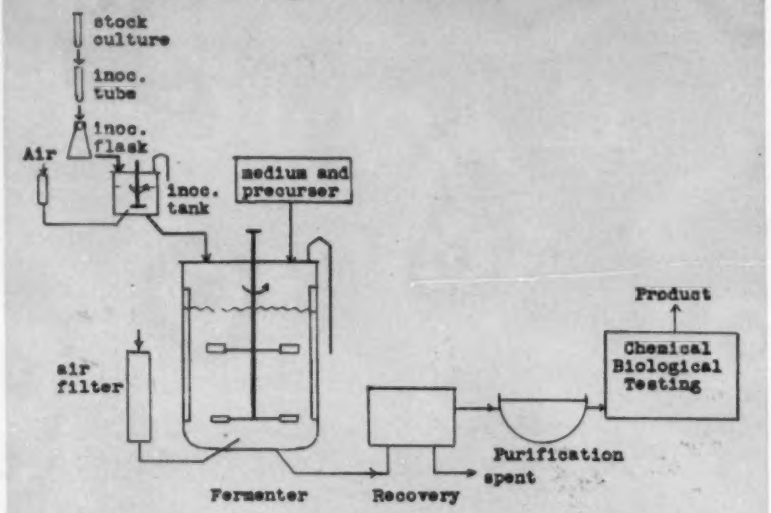
FIGURE II
Schematic Diagram for Antibiotic Production



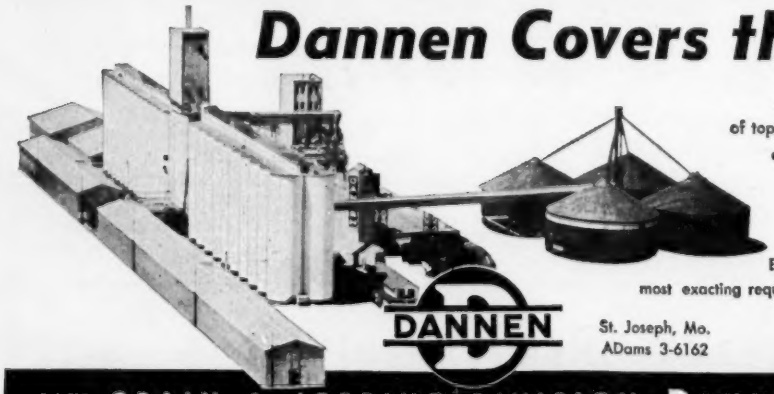
factors play a decisive role in determining medium composition.

Some of the most commonly used raw materials in antibiotic fermentations are shown in Table III. Examples of some media employed in the production of a few well known antibiotics are shown in Table IV.

TABLE III
Ingredients of Antibiotic Fermentation Media

Material	Major Use	Material	Major Use
Glucose	Carbon source	Corn steep liquor	Nitrogen source
Lactose	Carbon source	Cottonseed meal	Carbon & Nitrogen sources
Sucrose	Carbon source	Soybean meal	Carbon & Nitrogen sources
Molasses	Carbon source	Soy peptone	Nitrogen source
Starch	Carbon source	N-Z Amine	Nitrogen source
Glycerol	Carbon source	Yeast and its extract	Nitrogen source
Maltose	Carbon source	Liver extract	Nitrogen source
Dextrin	Carbon source	Distillers dry soluble	Nitrogen source
Soybean oil	Carbon source	Beef extract	Nitrogen source
Cottonseed oil	Carbon source	$CaCO_3$	pH control
Lard oil	Carbon source	$KH_2PO_4MgSO_4 \cdot 7H_2O$ and trace elements	Mineral source

Dannen Covers the Midlands



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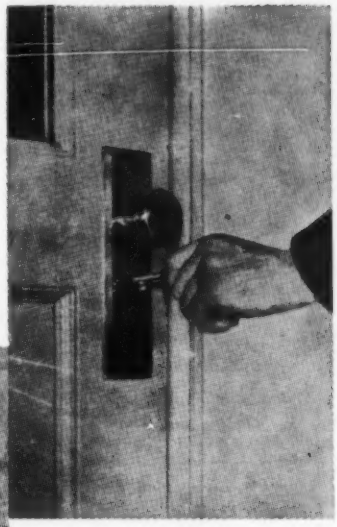

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YOU TURN THE KEY AND LOCK THE DOOR"
IF YOU FOLLOW THIS WISE WARNING
THERE'LL BE WORK FOR ALL NEXT MORNING

IF YOU SMELL OR SEE OR HEAR
SOMETHING DIFFERENT, SOMETHING QUEER
AND CAN'T FIX IT ON THE SPOT
JUST DON'T LET IT BE FORGOT

HERE YOU HAVE THE LOWLY BROOM
PUSHED BY—NEVER YOU MIND WHOM
IF HE GOES IN VIGOROUS STYLE
UP AND BACK DOWN EVERY AISLE
ONLY STOPPING AS HE TURNS
TO SAY, "A CLEAN PLANT SELDOM BURNS!"

"It is awfully hard for a plant to burn
that is kept up and kept clean by careful men"

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Cereal products are favorable raw materials used extensively in the antibiotic industry in one form or another. They are now involved in the production of practically all the well known antibiotics (Table V). The most commonly used cereal products are glucose, starch and corn steep liquor. Dextrin, maltose, corn meal, hydrolyzed corn and wheat gluten are used to a lesser extent.

A multitude of reactions are involved in the complex processes of growing cells and producing antibiotics, and each component in the medium has its specific effects. It is often found that some nutrients are essential, whereas others are replaceable. For instance, in penicillin fermentation, lactose serves as source of slow supply of carbon and energy. Its substitution by glucose altered the chemical change pattern significantly and resulted in low penicillin yields. However, when glucose was added at a slow rate throughout the fermentation, the characteristics of the chemical change were found to be similar to those of the lactose fermentation, and the penicillin yield was higher (Figs. IV, V, VI). For commercial production, a mixture of glucose and lactose has been recommended. This recommendation was made because glucose could serve as a quick carbon and energy source for mycelial growth, and lactose would serve as a slow energy and carbon source for antibiotic production (4).

Medium ingredients may have such profound effects as even altering the type of the antibiotic produced. This

TABLE IV

Typical Media for Production of Antibiotics

Chlortetracycline	%	Penicillin	%	Streptomycin	%
Corn steep liquor	3.0	Lactose	3.5	Glucose	1.0
Sucrose	3.0	Corn steep liquor	3.5	Soybean meal	2.0
$(NH_4)_2SO_4$	3.0	KH_2PO_4	0.4	Distillers solubles (dry)	0.5
NH_4Cl	3.3	$CaCO_3$	1.0		
$CaCO_3$	0.9	Maize oil	0.16	Sodium chloride	1.0
Trace element solution	0.03	Phenylacetamide (precursor)	0.15		

TABLE V

Cereal Products in Antibiotic Fermentations

Antibiotics	Glucose	Starch	Corn steep liquor	Reference
Actinomycins	+	+	−	1
Bacitracin	+	+	−	13, 20
Chloramphenicol	+	−	+	28
Chlortetracycline	+	+	+	7, 8, 26, 27, 28
Erythromycin	+	+	+	5
Neomycin	+	+	−	33
Oxytetracycline	+	+	−	30
Penicillins	+	+	+	1
Polymyxins	+	+	+	2, 3
Tetracyclines	+	+	+	14, 21, 26
Streptomycins	+	−	+	29

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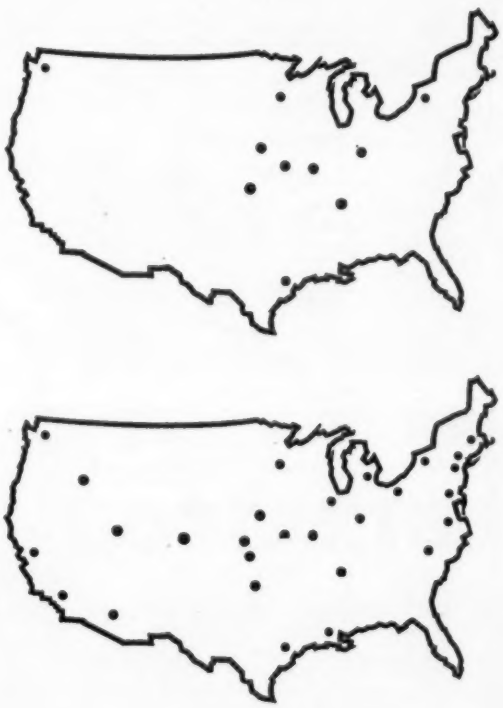

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was demonstrated dramatically by the fermentation with a strain of Streptomyces aureofaciens in three different media (22). The culture grown in medium A gave exclusively chlortetracycline. In medium B, the culture produced a group of new antibiotics in addition to chlortetracycline. And in medium C, only the new group of antibiotics was formed (Table VI).

In the actinomycin fermentation with Streptomyces antibioticus, a number of actinomycins are produced in synthetic media containing only one or two amino acids as sole nitrogen source (18,19). These antibiotics differ in the composition of amino acids in the peptide moiety of the molecule (Fig. VII). The use of different amino acids as nitrogen source shifted the ratio of these antibotics produced (Table VII). Should an occasion arise in which it is desirable to replace the pure amino acids with corn steep liquor, protein hydrolysate or distiller's dry solubles, the amino acid make-up of the material under consideration would undoubtedly influence the yield and composition of the actinomycin produced. It is obvious that selection of a proper crude nitrogen source is essential in obtaining a maximum yield of a desired component of actinomycins.

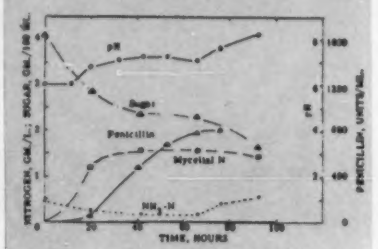
A minor ingredient or component in a nutrient may, in some instances, affect the course of a fermentation. With a culture capable of producing both tetracycline and chlortetracycline, the ratio of the yields of these antibiotics may depend upon the chloride content of the raw material. Formation of chlortetracycline may be prevented by dechlorination of the corn steep liquor (25) or by the use of cotton seed meal as substitute for corn steep liquor (23). Cottonseed meal is characteristically low in chloride.

In formulating a fermentation medium for industrial use, the physical properties such as viscosity and surface tension must also be taken into consideration. A highly viscous medium creates problems in aeration and agitation. A medium with a low surface tension would have a tendency towards excessive foaming and would require the use of a large amount of defoaming agent which in turn may complicate the isolation and purification process. Such difficulties were encountered in the development of the medium for synnematin production.

A medium containing soybean oil meal, corn meal, calcium carbonate, and stenol was found to give good yields in laboratory scale, but it was not practical in large fermenters be-

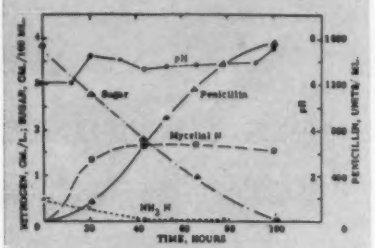
FIGURE III

Biochemical Changes in Low- and High-Yielding Penicillin Fermentations (4)



Chemical Changes in Low-Yielding Fermentation

Aeration 0.64 l./l./min., agitation 580 r.p.m.



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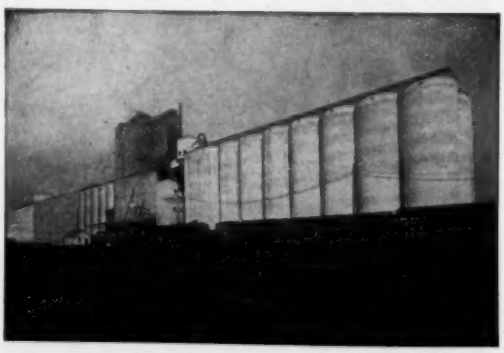

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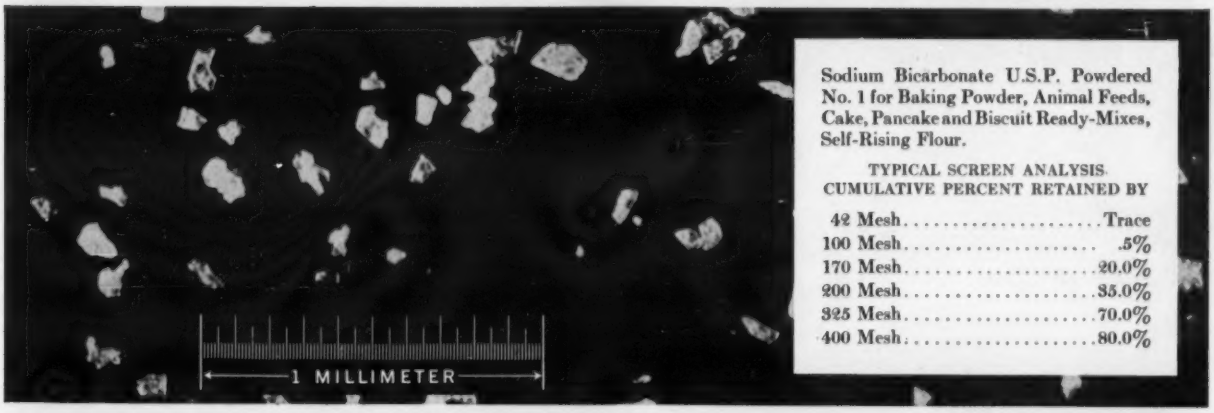

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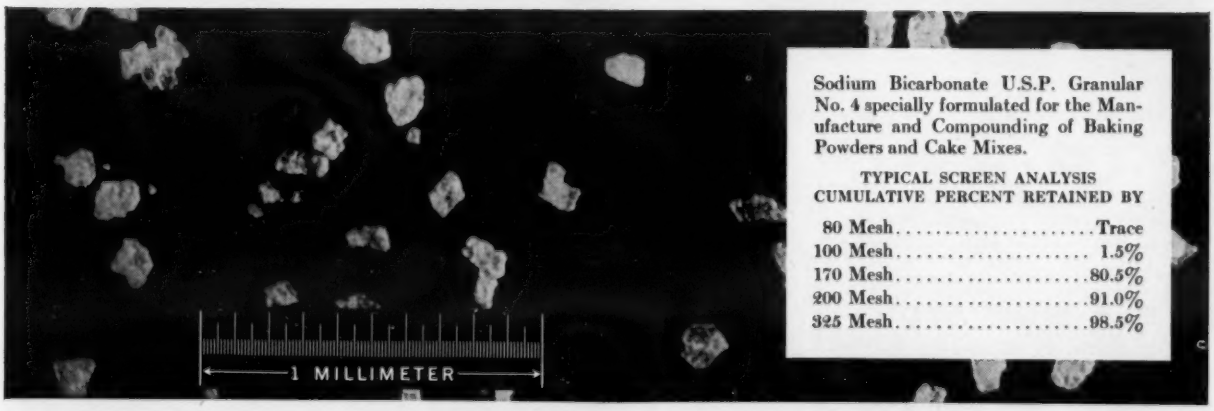

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cause of the difficulties involved in agitation, foam control, and isolation of the antibiotic.

Most of the nation's annual production of corn steep liquor, estimated at 100 to 150 million pounds, is currently consumed by the antibiotic industry (32). Approximately 15 million pounds of commercial glucose are used annually for the production of penicillin and streptomycin. Considerable quantities of starch are utilized in the tetracycline fermentations. In view of the expanding production of antibiotics and the successful use of microorganisms in the transformation of complex organic substances such as steroid hormones, the demand for raw material of cereal origin will undoubtedly be increased substantially in the near future. «

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FIGURE IV
Chemical Changes in a Lactose Fermentation (17)

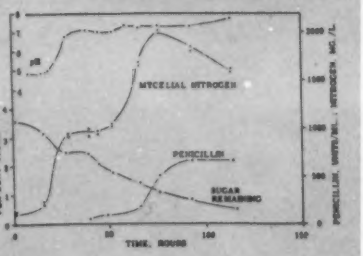

FIGURE V
Chemical Changes in a Glucose Fermentation (16)

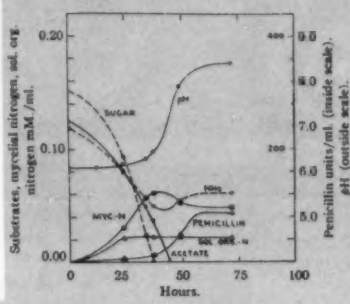

TABLE VI
Variations in Streptomyces Aureofaciens Fermentation (22)

	Medium A	Medium B	Medium C
Fermentation variations	2% cane molasses 1% dextrose 0.5% bacto-peptone	1% corn starch 0.3% N-Z amine, type A 0.2% NaCl 0.2% $(NH_4)_2HPO_4$ 0.15% KH_2PO_4 0.05% K_2HPO_4 0.025% $MgSO_4 \cdot 7H_2O$ 0.03% dried yeast 0.03% dried enzyme digest of liver	3% sucrose 0.5% $CaCO_3$ 0.2% N-Z amine, type A 0.2% $(NH_4)_2HPO_4$ 0.2% $(NH_4)_2SO_4$ 0.2% KH_2PO_4 0.1% $MgHPO_4 \cdot 3H_2O$ 0.01% KBr
Antibiotics produced	Chlortetracycline	Chlortetracycline + Antibiotic X	Antibiotic X

TABLE VII
Influence of Amino Acids on Actinomycin Synthesis (19)

Medium	Concentration of Amino Acid added (%)	Relative percentage of actinomycin components I	II	III	IV	V	*
1 Glutamic acid medium	0.0	6.4	2.3	3.2	68.3	17.2	2.6
2 Glutamic acid medium + hydroxy-L-proline	0.25	31.0	3.8	7.1	25.3	30.0	3.0
3 Glutamic acid medium + sarcosine	0.05	9.1	25.6	35.0	24.4	5.9	0.0
4 Glutamic acid medium + N-acetylglycine	0.25	8.1	2.0	3.2	32.7	51.1	3.0
5 Glutamic acid medium + L-isoleucine	0.25	4.7	2.8	5.8	17.2	30.6	38.9

*Denotes an unidentified component which moves faster than component V in circular paper chromatography.

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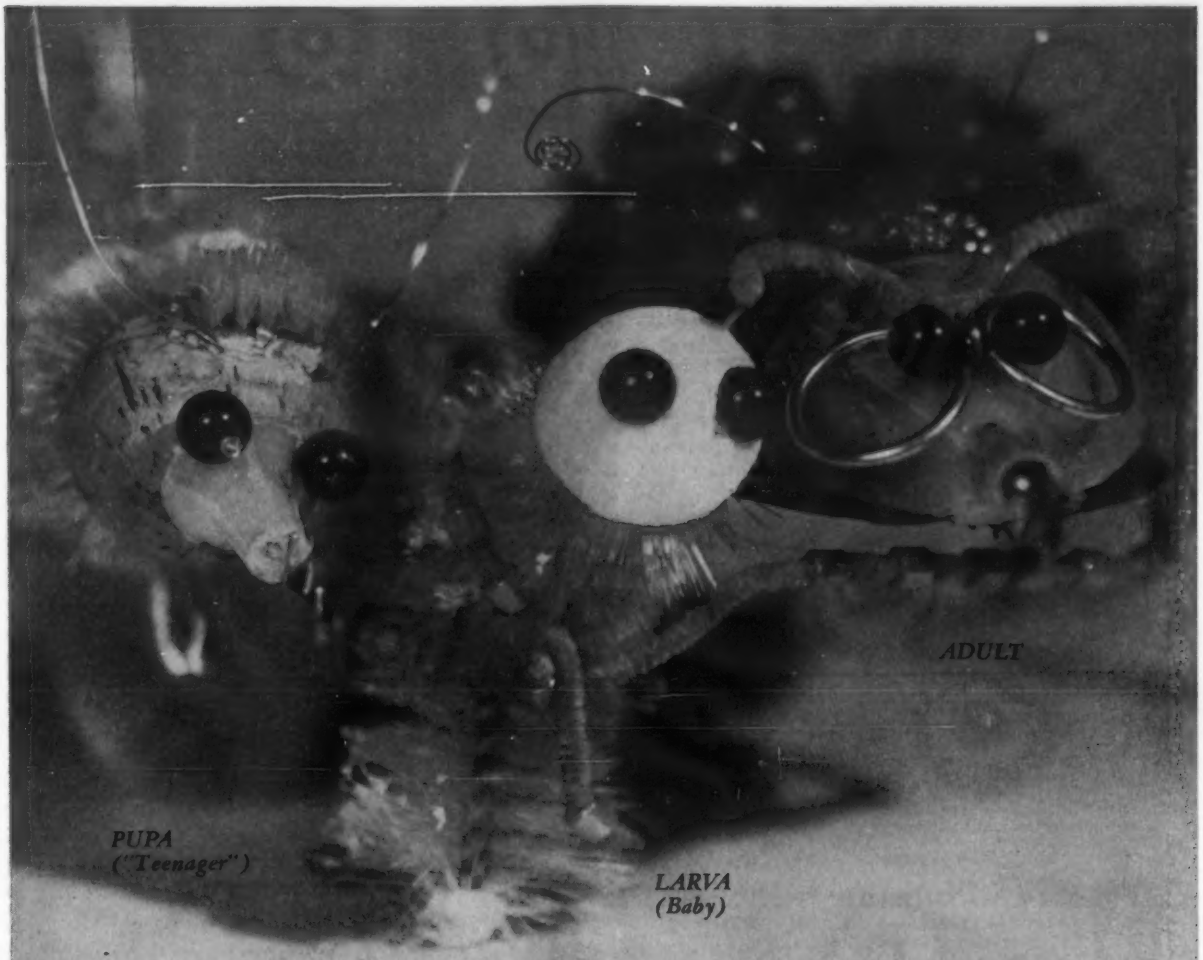

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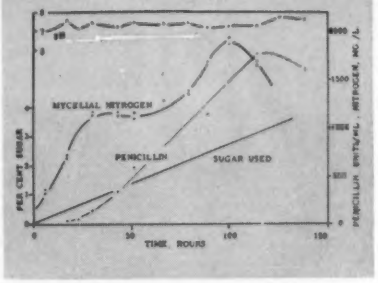
FIGURE VI
Chemical Changes in a Continuous Feed Glucose Fermentation Without Separate Growth Phase (16)



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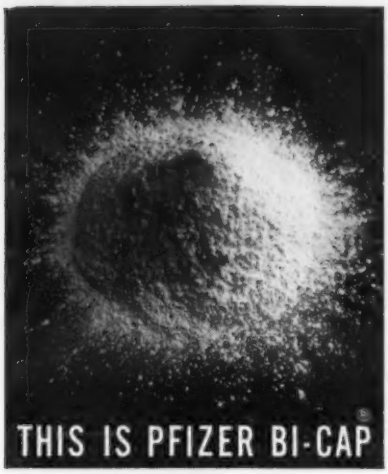

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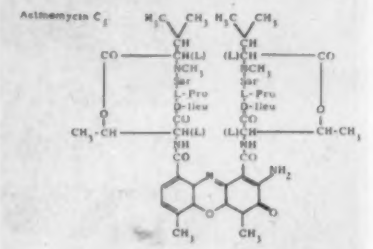
FIGURE VII
Structure of Actinomycin C_3



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ABOUT THE AUTHORS

Dr. Ping Shu received his Ph.D. degree at the University of Wisconsin in 1948. He now is with American Cyanamid Co. Dr. Shu has worked on fundamental aspects of bioengineering in relation to microorganisms. His contribution to the field covers areas such as pass-ways and mechanism of biosynthesis, aeration agitation scale-up, oxidation reduction balances, microbial transformation and synthesis of organic compounds.

●

Miss Marjorie Darken is senior research scientist, Lederle Laboratories Division, American Cyanamid Co. She has been engaged actively in research on the fermentation of antibiotics, vitamins and steroidal compounds since 1943. She has published several technical papers and holds antibiotic patents. Miss Darken is a fellow of the American Association for the Advancement of Science; a member of the American Chemical Society; Society of American Bacteriologists; the Society for Industrial Microbiology; Phi Beta Kappa, and Sigma Xi.

Flour Export Group To Meet in Montreal

The Canadian Flour Export Committee will initiate a "first" for its membership. For its annual meeting Nov. 17 the committee will move to the Queen Elizabeth Hotel in Montreal, making it the first time its annual meeting has been scheduled outside of Toronto.

On the speaking end of the program, the export committee will have Clarence D. Howe, P.C., chairman of the board, Ogilvie Flour Mills Co., Ltd. Mr. Howe formerly was minister of trade and commerce and defense production.

Donald M. Hunter, president, T. H. Taylor Co., Ltd., Chatham, Ont., will preside as chairman of the sessions. «

BISSC Reelects Officers, Reviews Two New Standards

The Baking Industry Sanitation Standards Committee has reelected its chairman, vice chairman and secretary-treasurer, along with adding two new directors to give the organization some help as it moves into another year of activity.

Robert S. Taggart, National Biscuit Co., New York, was reelected chairman; Philip F. Winters, the Kroger Co., Cincinnati, vice chairman, and Raymond J. Walter, New York, secretary-treasurer.

New directors are Edward H. Leedy, Lockwood Manufacturing Co., Cincinnati, and Peter H. Valentyne, Baker Perkins, Inc., Saginaw, Mich.

BISSC reviewed and approved two proposed standards, one for flour handling equipment, the other for liquid ferment and continuous mix processing equipment.

This will bring to a total of 20 the number of standards developed and approved, plus revision of two standards, since the organization was founded late in 1949.

Standard No. 1 is the revised standard for flour handling equipment and includes provisions for the facilities for the handling and storing of bulk flour. This standard and the standard for liquid ferment and continuous mix processing equipment are now being prepared for publication in accordance with BISSC procedure and are expected to be released in printed form the first part of the year.

The new BISSC brochure will be officially released at that time. This booklet outlines what BISSC is, how it operates, and its progress to date. «

Obituary

FREDERICK G. MERCKEL, director and retired president of Wallace & Tiernan, Inc., of a heart ailment, in London. He was 64. Mr. Merckel joined Wallace & Tiernan in 1921 and was assigned to the Kansas City sales office. Later the same year he was sent to Shanghai to supervise installation of a new water filtration plant. Upon his return to the U.S., he was made manager of the W.&T. office in Chicago, which position he retained until 1930, when he returned to the main office. Jan. 1, 1954, he became president, upon merger with Novadel-Agene Corp. Survivors are his widow, one son, a daughter, and six grandchildren. «

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Pillsbury Company
Ralston Purina Co.
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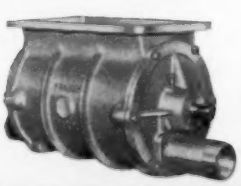
St. Louis Flour Mills



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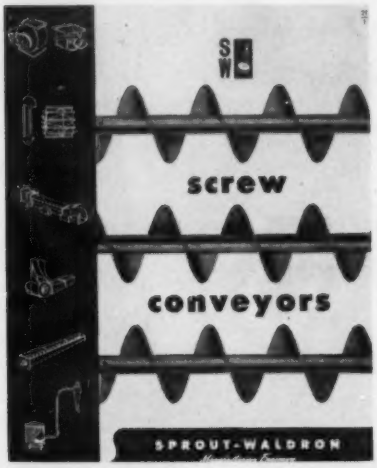
Screw Conveyors

Sprout, Waldron & Co., Inc., has available its bulletin No. 83-A describing standard and industrial gastight screw conveyors. It gives specifications on diameters, thickness of flights, weights, lengths and maximum



horsepower of the continuous-sectional flight screw conveyor, along with notes on ordering. There is an explanation of construction features, plus photographs, and a sheet for supplying the information necessary when ordering conveyors.

Circle No. 4650
on Reply Form for Details

Elevators, Conveyors

A bound catalog and reference manual with information on its line of bucket elevators and trough-belt conveyors has been made available by Universal Hoist Co. The manual contains complete price, specification and dimensional data on the units offered.

Circle No. 4651
on Reply Form for Details

Moisture Register

Moisture Register Co. has available its "G-6" moisture register claimed to be the fastest moisture test attainable for many granular, ground, powdered, loose or shredded materials. The "G-6" is a refinement of the firm's older model and is said to provide a practical accuracy to 0%. The unit can be used anywhere, thereby saving laboratory and production time. One minute is required for a test without special skill or training for the operator. The unit uses high hydraulic pressure to assure a homogenous sample and is already calibrated for many materials.

Circle No. 4652
on Reply Form for Details

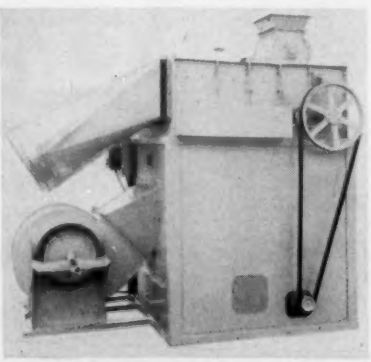
Detection System

A system reported to detect an explosion at the instant of its inception, thereby acting within a few thousandths of a second to snuff out the blast, is offered by Fenwal, Inc. The system is said to be capable of dealing effectively with most ordinary explosion hazards known to exist throughout industry. It operates on the basis that a blast may appear to be instantaneous to the naked eye, but there is a finite lapse in time between the ignition and the build-up of destructive pressures. The system acts within this period.

Circle No. 4653
on Reply Form for Details

Grain-Cleaning Machine

A grain-cleaning machine that utilizes centrifugal action rather than a shaker screen to assure efficient and continuous operation has been placed on the market by Ross Manufacturing and Sales Co. The Romsco Centrifugal Cleaner was invented and patented by E. O. Ross, president of the Ross firm. It provides a sharp departure from the shaker screen method



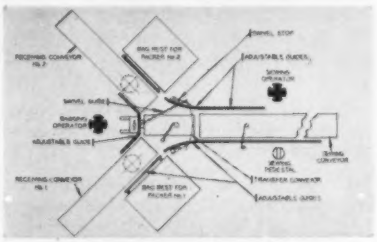
of removing pulp particles and other foreign matter from all kinds of grain, and is constructed with rotating cylinder discs—five sets of them—which turn in the same direction and intermesh.

When whole grain is fed into the cleaner, serrated edges of the cylinder discs quickly separate the grain from the waste material. The grain drops through the rotating discs into a hopper within the machine and outward through a vacuum valve. At the same time, the pulp particles and other foreign matter are being whisked along the top of the discs and out of the machine by centrifugal action. «

Circle No. 4654
on Reply Form for Details

Flour Bagging

Richardson Scale Co. has developed a system of faster flour bagging said to cut operating costs by half. With the Richardson "Y-Veyor" and a duplex packer one man can load bags on two packers alternately. Filled



bags from both packer receiving conveyors are shunted automatically to a common sewing conveyor where they are sewed by a second operator. Only two men are needed for bagging and sewing the two-unit output. Heart of the "Y-Veyor" is a transfer conveyor which automatically switches back and forth between both bag receiving conveyor and the common sewing conveyor. The switching action is triggered by limit switches operated by the conveyed bag. Up to 15 bags of 100 lb. each a minute can be handled by the duplex packing system and the "Y-Veyor." Higher speeds are claimed for packing of 50-lb. bags. The operator does no lifting of the filled bags. The unit will handle 50, 100, 140 and 200 lb. bags of either paper or textile. A bulletin illustrating and describing the operation is available.

Circle No. 4655
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Grain Trailer

Wilson Trailer Co. offers a grain trailer featuring a self-contained belt conveyor. It is a modification of the standard Wilson Model FSTG grain trailer with a 12-in. wide PTO-operated continuous belt conveyor in the trailer floor. Further modifications were made in the rear bumper to make room for a special unloading chute and flow-control door. Special floor panels were added to protect the conveyor system. These can be removed individually from the rear as the trailer is unloaded.

Circle No. 4656
on Reply Form for Details

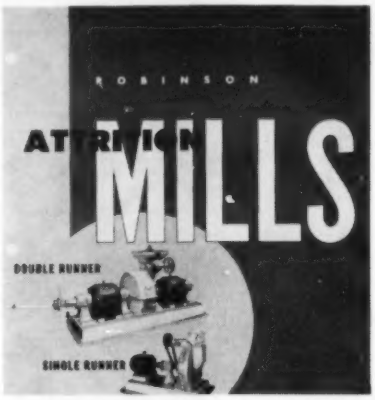
Portable Blowers

The Vac-U-Vator Division of Dunbar Kapple, Inc., is supplying portable blowers to move grain from tankships into warehouses when such ships are temporarily converted to grain carriers. The grain is blown from the tanker into storage areas through flexible pipes running from the ship through warehouse windows. To keep the piping clean and sanitary, it has been lined with a thin gauge stainless steel produced by Allegheny Ludlum Steel Corp. The corrosion-resistant stainless steel is said to keep the interior of the hose sanitary, while still permitting flexible operations. Without the portable grain handling equipment, many ports lacked necessary facilities to unload grain quickly. Now the tankers carry their own unloading equipment. The hose lines are equipped with several nozzles which can be lowered into the tanks to suck out the grain. The flexible hose or pipe also provides for up and down or side movements of the ship in the water.

Circle No. 4657
on Reply Form for Details

Attrition Mills

Young Machinery Co., Inc., is offering without charge a bulletin, A-560-A, on Robinson single and double runner attrition mills. It covers motor and belt-driven runner mills, "Frigidisc" single runner water cooled mills, "Attritor" pressure-fed single runner mills, and the complete line



of "Junior Disc" single runner mills for laboratory, pilot plant and small capacity operations. Complete dimensions, weights and capacity specifications are given, along with details on feeding mechanisms, drives, design features and specific applications. Attrition mill plates also are illustrated and described. Young "Robinson" attrition mills are in wide use for the reduction of food, chemical and numerous other industrial products.

Circle No. 4658
on Reply Form for Details

Insect Kill Testing

Positive checking on insect kills from fumigation of stored grain is possible with a special "bug rope" developed by H. T. McGill Co. The "Bug Rope" is a hollow-core, braided polyethylene rope which will hold small, cylindrical insect cages at any desired intervals. The rope with the insect cages is pushed into the grain mass with a metal probe rod. The metal tip of the rope also contains an insect cage for bottom-of-the-bin testing. Once the rope is inserted in the grain, the probe rod is withdrawn for setting the next rope.

Circle No. 4659
on Reply Form for Details

Checkweigher

An intermediate range, automatic checkweigher to handle items of 2 lb. to 25 lb. has been made available by the Toledo Scale Corp. Designated Model 9463, it will handle packages up to a maximum size of 12 in. in length by 12 in. wide with a zone edge tolerance of plus or minus ¼ oz. Normal checkweighing rate is 60 items a minute, with faster speeds possible using shorter length packages. The unit is equipped with a motorized conveyor for in-line checkweighing. It eliminates spot checking and manual checkweighing methods. Other features include phase-sensitive amplifiers and printed electrical circuitry for protection against line voltage fluctuation. Plug-in electrical component design is supposed to provide ease of interchanging of parts.

Circle No. 4660
on Reply Form for Details

Electric Car

The Birdie Co. has issued a two-color catalog on its one-man, battery electric car for use in mills, warehouses and other places where a small

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vehicle can be of advantage. The car is said to be exceptionally light (181 lb.), narrow (35 in.) and of simplified construction. The Birdie car travels 10 miles on a single charge, carries any

man and 100 lb. cargo, and is claimed to be virtually free of maintenance. A free copy of the literature is available.

Circle No. 4661
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Pan Greaser

Mallet & Co., Inc., is offering its Model 600 multi-pan greaser for automatically greasing a full set of bread pans in 3, 4 or 5 pan straps. Greasing of complete straps is accomplished by individual spinning disc applicators which apply oil simultaneously inside each pan. Positive synchronization of pan and greasing disc assembly gives complete coverage with a uniform grease pattern, says the manufacturer. It also eliminates undesirable oil accumulation on top surfaces of the straps, resulting in cleaner pans. Uniform depanning is a feature, along with an enlarged tank reservoir to hold one entire 55-gal. drum of pan oil, reducing the number of filling operations and eliminating the need to store an oil drum near the machine.

Circle No. 4662
on Reply Form for Details

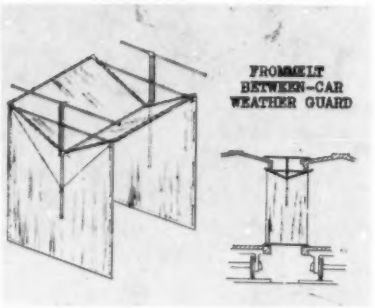
Power Conveyors

Five types of horizontal power conveyors are described and illlustrated in an 8-page bulletin available from Rapids-Standard Co., Inc. Product and installation photographs show an APC (adjustable pressure) conveyor in wheel and roller models, live-roller conveyors, belt-on-roller conveyors, and table and turntable types. The turntable conveyor is used in conjunction with other conveyor equipment to make directional changes in minimum floor space. Specifications are included for all types of conveyors discussed, covering standard lengths, widths, speeds and horsepower requirements. The bulletin is No. 19-1200—Horizontal Conveyors.

Circle No. 4663
on Reply Form for Details

Weather Guard

Frommelt Industries, Inc., has introduced a unique type of car-to-car weather protector, the "Between-Car-Weather-Guard," for maximum overhead protection and to divert water drainage to either side and well away from car doors. The device is a rigid, lightweight aluminum frame and "Fro-Prene" nylon cover combined with a special design to fit between wood or steel boxcars, regardless of height or width of doors, or distance between the cars. The Frommelt unit is easily set in position and becomes instantly self-locking and self-supporting with tension springs and framing



arrangement. An inverted V top frame provides maximum overhead protection, the manufacturer claims. Weather-Guard can be set in position from the floor of the car and securely locked in minutes without tools, clamps or gadgets. Protective side curtains may be easily adjusted to meet varying heights of the car doors. These fasten securely inside the cars for a draft-free, weather-tight closure.

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Russell-Miller's more than 75 years of top milling experience means we have acquired the skill to give you such flour. Our mills are strategically located in the best wheat growing areas—in the Northwest, the Central States, the East and the Southwest. Here we select and store in the great elevator capacity available to us, the choicest wheats. Thus, we have a ready-at-hand supply of just the right wheats for milling the quality flours you need to produce the top-notch baked goods your customers demand.

Over seventy-five years of working with the baking industry has taught Russell-Miller to understand your needs and interests. And, just as important, these years have helped Russell-Miller grow into a milling concern of a size and capacity that allows us to really *do* something about our desire to serve you well.

We maintain the latest machinery and methods known to milling. The quality of every sack of Russell-Miller Flour is rigidly controlled. That's why bakers usually rely on Russell-Miller Flours when they bake experimentally to set standards for their line. The majority of the premium breads on the market today were developed with and continue to be baked from Russell-Miller Flours.

We send specialists every year into the heart of the wheat growing areas in advance of the harvest to collect wheat samples which are experimentally milled. Result? We know exactly which wheat to buy for the exact type and quality of flour you need.

Just as you judge your friends on the basis of honesty, sincerity, genuine interest in you and their desire to do good—so you should judge and choose your flour miller.

For more than 75 years Russell-Miller has had a tradition of interest in you and the future of your industry. Here's just one example. Russell-Miller gives technical and, in some cases, financial support to private and governmental wheat improvement groups throughout the country. This we do in an effort to see that the best possible wheat is grown to supply the baking industry with the best possible flour.

In short, for more than three quarters of a century Russell-Miller has looked on its position of leadership as obligation to do everything possible to answer all of your needs with the best flour. *That's* where tradition makes a difference in the flour you buy.

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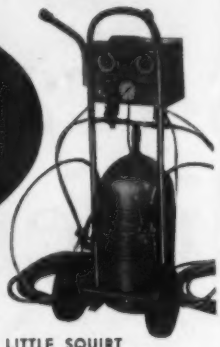

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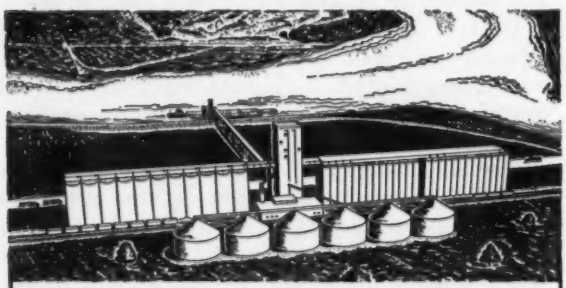

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Yesterday:

Liverpool and Chicago Made the Market Tick

During the late 'twenties, the Liverpool market was still considered the market place for the world's surplus wheat crops—from the U.S. and Canada, from Argentina, from Australia, from the Danubian countries of central Europe, the Russian Ukraine and even from India on occasion. Chicago ranked equally as another great market place. So did Winnipeg once upon a time, but its glory has diminished under the controls exerted by the Canadian government and the Canadian Wheat Board.

Chicago and Liverpool do not have much in common. There is a time lag of six or seven hours—depending upon whether Chicago is on daylight saving time—and this means that Liverpool opens and closes earlier each day.

The English market is known as the Liverpool Corn Exchange but that term is not derived from the American word corn which means maize. Corn, in British parlance, is the generic term for grains of all kinds.

Prior to World War II, advances or declines in Liverpool wheat futures prices any morning before the Chicago Board of Trade opened for business at 9:30 a.m. could and usually did have some impact on prices on the U.S. market. Likewise, advances or declines at Chicago after the close of the British exchange could and usually did have an effect on the Liverpool market the following morning.

Accordingly, back in "those days," the Liverpool wheat market was considered to be any one of three things—1. "as due"; 2. so much "higher than due," or 3. so much "lower than due" in accordance with the extent of this reflection of price changes at Chicago late the previous session. This, in turn, brought the question "How are the cables?" into common usage as one Chicago trader or broker greeted another as they met on the trading floor early each morning.

Of course, there were certain other ramifications due to three individual essential differences in trade practices that exist in the U.S. as compared with those in England. One of these and, probably the most important, is the fact that in the U.S. the 60 lb. bushel is the unit of measurement while across the water they use the cental of 100 lb. (The British also complicate matters further by using the hundredweight which, believe it or not, weighs 112 lb. And they have the quarter weighing 480 lb.—8 bu.—and their ton is 2,240 lb. They also use metric tons.)

Thirdly, in the complicating circumstances, is the fact that Chicago quotes in dollars and cents and the British in shillings and pence. (There are 12 pence to the shilling and 20 shilling to the pound sterling.) And this third circumstance is further complicated by the matter of foreign exchange—the relationship between the U.S. dollar on the one hand and the pound sterling on the other.

So, to make an accurate appraisal of the extent to which the Chicago market reflected the action in Liverpool, the first step was to translate the advance or decline in question to a common basis of a 60 lb. measure, then translate those net changes in terms of "pence" to "cents" and finally, apply the "going" value of the British pound sterling to the result—and only then would the marketman have the full picture.

Bombed out in the early days of World War II, with the grain trade subjected to strict

Today:

Surpluses, Subsidies Exert Their Influences

government control for many years after the war, and the Exchange reopened only a few years ago, it has never regained its former position of dominance and importance in the world's futures market.

It has managed to stage only a little more of a comeback as a cash wheat market than it has in futures. Just like its prototypes in North America, it has suffered from the mad rush of surplus producing countries to unload their grain as fast as possible before they raise the next crop.

The place of Liverpool in the world's wheat marketing picture has diminished because of government domination of the export situation in the U.S. and Canada. One of the agencies that cut a big swath in the chances for the rehabilitation of Liverpool was the International Wheat Agreement. That organization was conceived in the womb of a group of international "do-gooders" who were going to accomplish the impossible task of setting world-wide import and export quotas with the deficit wheat countries saying how much of the bread cereal they would take—and the surplus producing group committing themselves to furnishing the wheat.

It started out in a blaze of glory in 1948 with all of its highminded objectives for the world to see—the hungry and starving would have bread and, at the same time, the over-supply in other countries, already beginning to be a serious problem, would be leveled-off. The only thing wrong with the idea was that it lacked practicality in that some important surplus countries refused any part of the program. On the other side of the picture, there were no means of compelling the deficit countries to accept and pay for the wheat within the price ranges set forth.

The decline of IWA came around 1954—and today it

Without the market place, without the men who buy and sell, there would be no steady supply of wheat for the operative millers to grind for commodity markets, with all their facilities, exert a stabilizing influence. But times have changed, as F. C. Bisson, THE MILLER'S veteran Chicago correspondent, points out in comparing yesterday with today. But one thing has not changed—the marketmen of Liverpool still gather amid the sawdust of The Slaughter House to quaff ale and discuss the day's business and their opposite numbers in Chicago still repair to pour a few libations in the gilded palaces of their choice . . . and discuss the day's business.

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is but a shadow of its former self. Though the British are now members, there was a period recently when they pulled out, an action roundly applauded by the men of Liverpool. And they were chagrined when the U.K. government rejoined.

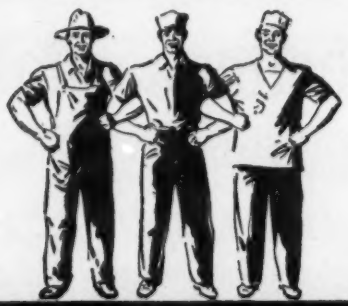
But then, as now, Liverpool is the nerve center for one service to the trade—Broomhall's Corn Trade News. Broomhall—circulating all over the world—publishes a valuable record of prices and movements, based on information provided by correspondents throughout the world. Its news helps to make the world's wheat markets tick. And it has made Liverpool renowned for accuracy.

But wheat production in many countries, while of ace-high importance in the immediate areas of failure or near-failure—does not appear to cut the figure it once did. One reason is the seeming endless supply of bread grain from the U.S. as a result of wholesale defaults to the government and that has watered down some of the anxiety over the possibility of famine.

Another factor coloring the situation—or giving it lack of color if you like—is that the pattern of foreign buying has changed radically now that the main consideration revolves round the granting of authorizations under the U.S. Public Law 480 and the eventual movement under subsidy.

Superseding many of the items in the daily news grist, which ordinarily would have market influence, are the ones based on national legislative developments, along with administrative decisions incidental to the wheat support program. Among these are determinations setting the price at which wheat is to be officially supported, the formal announcements regarding acreage allotments and the matter of marketing quotas.

But even after allowing due weight to the measurable effect of withholding wheat supplies from the normal channels of trade and the inevitable ultimate impact which the disposal of these defaulted holdings might be expected to exert on the market—it must be observed that there has yet been no convincing evidence of any strong ability to ignore the age-old law of supply and demand. The only difference is that the U.S. government has such a large part of the supply . . . and as long as its citizens have the taxes which go to pay for the wheat that is used to reimburse exporters in the way of subsidy, the demand from deficit foreign countries will be there to absorb it «



BE AS PROUD OF YOUR JOB
AS WE ARE OF OURS, *for*
BREAD IS THE
STAFF OF LIFE

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Cable address: Centennial Mills, Inc., Portland, Oregon
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Complete line of fine quality Bakers' Flours.
Fancy Durum and Winter Wheat Granulars for macaroni industry.
MILLS AT: PORTLAND, SPOKANE, WENATCHEE

ADM's First Quarter Earnings 36% Over Corresponding Period of Previous Year

Archer-Daniels-Midland Co. forged ahead in the three months ending Sept. 30, pushing quarterly earnings to a point nearly 36% above a year earlier.

Shareholders were given the good news by John H. Daniels, ADM's president, that profits for the three months amounted to $1,130,348, equal to 72¢ a common share. By contrast, earnings for the same period of the previous year were $857,503, or 53¢ a share.

But—in announcing improved earnings—Mr. Daniels cautioned shareholders at their annual meeting that the company continues to face problems in several areas of its operations.

Current Earnings

Earnings for the current October-December quarter, the second of ADM's fiscal year, will depend largely on general economic conditions, and more specifically on the agricultural processing industry, which is still spotty.

Nevertheless, he stated optimistically, ADM hopes to come close to the 70¢ a share earned in the corresponding quarter of last year.

A dividend of 50¢ a share, payable Dec. 1 to shareholders of record Nov. 16, was voted by the board of directors. This will be ADM's 137th cash dividend and 117th consecutive quarterly dividend. There are 1,569,571 shares of stock outstanding.

Mr. Daniels was reelected president and chief executive officer, while Thomas L. Daniels was reelected chairman of the board. To round out its top management structure, ADM shareholders also reelected these men to its board:

Walter G. Andrews, executive vice president-chemical group; S. M. Archer, Jr., investments, Pebble Beach, Cal.; Robert W. Austin, professor, Harvard School of Business Administration, Boston; Richard G. Brierley, executive vice president - specialty group; Crowdus Baker, president, Sears, Roebuck & Co., Chicago; Henry W. Collins, vice president and manager of west coast grain operations, Portland, Ore.; Erwin A. Olson, executive vice president-agricultural group; Samuel H. Rogers, senior vice president, Northwestern National Bank of Minneapolis, and Burton W. Schroeder, administrative vice president.

As an added treat, shareholders were given a view of some of ADM's newest products already in use in such diverse industries as food, textiles, plastics and automobiles.

Thomas L. Daniels, in his remarks, said that both political parties are committed to lowering farm surpluses. While this could reduce ADM's grain storage operations, it should not affect the company's expanding grain merchandising program, he said.

ADM's board chairman was critical of Congress' failure to attack the surplus problem through increased research on new industrial uses for agricultural commodities. Most research effort, he said, is directed toward increasing production, which in turn adds to the surplus of farm products.

Mr. Daniels emphasized that—while the company is strengthening other phases of its business, such as chemicals—it has great confidence in the agricultural part of its operations and expects these to continue contributing substantially to future earnings. «

SINCE 1885

PK

Mere age, of course, does not imply superiority... but a continual adherence to the creed of "no compromise with quality" has proved PK a leader in bag design and printing.

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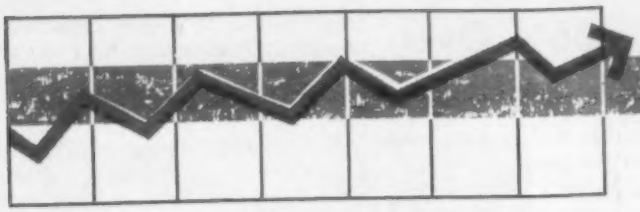
KANSAS CITY • BUFFALO • NEW YORK



FLOUR PRODUCTION

A Statistical Service Provided Continuously for Readers of The Northwestern Miller for More than Half a Century.

WEEKLY FLOUR PRODUCTION, IN SACKS (CWT.)

Flour production in principal manufacturing areas by mills reporting currently to The Northwestern Miller with relationship of production to capacity and to the total estimated output of all mills in the U.S. expressed in percentages:

	Oct. 23-30, 1960	*Previous week	Oct. 25-Nov. 1, 1959	Oct. 26-Nov. 2, 1958	Oct. 27-Nov. 3, 1957
Northwest	783,359	829,081	798,751	766,202	734,487
Southwest	1,584,144	1,510,130	1,624,117	1,487,814	1,383,858
Buffalo	553,137	652,238	559,445	562,830	599,419
Central and Southeast	691,884	702,348	649,571	614,659	591,922
Pacific Coast	412,994	440,718	496,143	512,667	333,720
Totals	4,025,518	4,134,515	4,128,027	3,944,172	3,643,406
Percentage of total U.S. output	78.2	78.2	75	75	75
Estimated total U.S. production	5,147,721	5,287,104			
Accumulated total this month	20,983,123	15,835,402			

*Revised.

	—Percentage of capacity operated in 5-day week—					Crop year flour production ——July 1 to——	
	Oct. 23-30, 1960	Previous week	Oct. 25-Nov. 1, 1959	Oct. 26-Nov. 2, 1958	Oct. 27-Nov. 3, 1957	Oct. 30, 1960	Nov. 1, 1959
Northwest	110	116	110	115	106	13,044,702	12,963,738
Southwest	120	115	126	113	106	24,439,134	25,442,754
Buffalo	106	125	113	118	123	8,461,768	9,111,851
Central and S.E.	103	104	100	108	100	10,941,150	11,022,214
Pacific Coast	89	94	106	163	103	7,512,235	8,157,932
Totals	109	112	114	118	107	64,398,989	66,698,489

NORTHWEST

Minneapolis

	5-day week capacity	Flour output	% capacity
Oct. 23-30	240,000	241,894	101
Previous week	240,000	*258,613	108
Year ago	231,000	225,787	98
Two years ago	237,000	235,278	99
Five-year average			52
Ten-year average			78

*Revised.

Principal interior mills in Minnesota, including Duluth, St. Paul, North Dakota, Montana and Iowa:

	5-day week capacity	Flour output	% capacity
Oct. 23-30	472,750	541,465	115
Previous week	472,750	*570,468	121
Year ago	494,500	572,964	116
Two years ago	430,500	530,924	123
Five-year average			176
Ten-year average			151

*Revised.

CENTRAL AND SOUTHEASTERN

Mills in Illinois, Ohio, Michigan, Wisconsin, Indiana, Kentucky, North Carolina, Tennessee, Virginia, Georgia and eastern Missouri:

	5-day week capacity	Flour output	% capacity
Oct. 23-30	672,260	691,884	103
Previous week	672,260	*702,348	104
Year ago	643,750	649,571	101
Two years ago	570,260	614,659	108
Five-year average			115
Ten-year average			112

*Revised.

SOUTHWEST

Kansas City

	5-day week capacity	Flour output	% capacity
Oct. 23-30	224,250	281,750	126
Previous week	224,250	*287,254	128
Year ago	221,750	273,347	123
Two years ago	287,500	236,894	82
Five-year average			184
Ten-year average			156

*Revised.

Representative Mills, Outside of Kansas City (Including Wichita and Salina)

	5-day week capacity	Flour output	% capacity
Oct. 23-30	1,090,750	1,302,574	119
Previous week	1,090,750	*1,222,876	112
Year ago	1,068,800	1,350,770	126
Two years ago	1,032,000	1,250,920	121
Five-year average			154
Ten-year average			133

*Revised.

BUFFALO

	5-day week capacity	Flour output	% capacity
Oct. 23-30	522,000	553,137	106
Previous week	522,000	*652,238	125
Year ago	493,500	559,445	113
Two years ago	475,000	562,830	118
Five-year average			17
Ten-year average			73

*Revised.

PACIFIC COAST

Principal Mills on the Pacific Coast

California, Oregon and Washington Mills

	5-day week capacity	Flour output	% capacity
Oct. 23-30	466,500	412,994	89
Previous week	466,500	*440,718	94
Year ago	466,500	496,143	106
Two years ago	315,000	512,667	163

*Revised.

DURUM PRODUCTS OUTPUT

Durum products output of mills reporting to The Northwestern Miller, in sacks, based on five-day week:

	5-day wk. capacity	Wkly. production	% of capacity
Oct. 23-30	177,500	192,744	109
Previous week	177,500	*229,678	129
Year ago	156,500	223,204	143

	Crop year production
July 1-Oct. 30, 1960	3,193,644
July 1-Nov. 1, 1959	3,293,464

*Revised.

Canadian Price Adjustments

Price adjustment figures announced by the Canadian Wheat Board and in effect Nov. 9 were as follows: To U.K. and other European destinations via Canadian and U.S. Atlantic ports, also via St. Lawrence, Churchill, Canadian and U.S. Pacific ports, 4⅝¢ bu.; to other countries, excluding U.S. and territories, from Canadian and U.S. Atlantic ports, 15⅛¢ bu.; from St. Lawrence, Churchill, Canadian and U.S. Pacific ports, 14⅝¢ bu. The above adjustment prices apply to wheat milled in Western Canada. For wheat milled in the Bayport area the rate is ½¢ bu. less, while for wheat milled in the Humberstone area and in the Toronto area the rate is 1¢ bu. less. Wheat milled in the Montreal area is 3¢ bu. less.

Production for Oct. 23-30 is at the left; for Oct. 30-Nov. 6 appears here

WEEKLY FLOUR PRODUCTION, IN SACKS (CWT.)

Flour production in principal manufacturing areas by mills reporting currently to The Northwestern Miller with relationship of production to capacity and to the total estimated output of all mills in the U.S. expressed in percentages:

	Oct. 30-Nov. 6, 1960	*Previous week	Nov. 1-8, 1959	Nov. 2-9, 1958	Nov. 3-10, 1957
Northwest	784,062	783,359	803,765	785,732	628,255
Southwest	1,538,412	1,584,144	1,816,446	1,516,090	1,206,532
Buffalo	567,112	553,137	549,125	566,157	504,983
Central and Southeast	632,135	691,884	673,781	614,486	453,985
Pacific Coast	411,463	412,994	534,669	546,334	284,510
Totals	3,933,184	4,025,518	4,377,786	4,028,799	3,078,265
Percentage of total U.S. output	78.2	78.2	75	75	75
Estimated total U.S. production	5,029,647	5,147,721			
Accumulated total this month	4,023,718				

*Revised.

	—Percentage of capacity operated in 5-day week—					Crop year flour production —July 1 to—	
	Oct. 30-Nov. 6, 1960	Previous week	Nov. 1-8, 1959	Nov. 2-9, 1958	Nov. 3-10, 1957	Nov. 6, 1960	Nov. 8, 1959
Northwest	110	110	111	118	90	13,828,764	13,767,503
Southwest	117	120	141	115	91	25,977,546	27,259,200
Buffalo	109	106	111	119	104	9,028,880	9,660,976
Central and S.E.	94	103	105	108	77	11,573,285	11,695,995
Pacific Coast	88	89	115	173	88	7,923,698	8,692,601
Totals	107	109	121	120	90	68,332,173	71,076,275

NORTHWEST

Minneapolis

	5-day week capacity	Flour output	% capacity
Oct. 30-Nov. 6	240,000	231,768	97
Previous week	240,000	241,894	101
Year ago	231,000	232,332	101
Two years ago	237,000	244,452	103
Five-year average			52
Ten-year average			78

Principal interior mills in Minnesota, including Duluth, St. Paul, North Dakota, Montana and Iowa:

	5-day week capacity	Flour output	% capacity
Oct. 30-Nov. 6	472,750	552,294	117
Previous week	472,750	541,465	115
Year ago	494,500	571,433	116
Two years ago	430,500	541,280	126
Five-year average			178
Ten-year average			152

CENTRAL AND SOUTHEASTERN

Mills in Illinois, Ohio, Michigan, Wisconsin, Indiana, Kentucky, North Carolina, Tennessee, Virginia, Georgia and eastern Missouri:

	5-day week capacity	Flour output	% capacity
Oct. 30-Nov. 6	672,260	632,135	94
Previous week	672,260	691,884	103
Year ago	643,750	673,781	105
Two years ago	570,260	614,486	108
Five-year average			115
Ten-year average			112

SOUTHWEST

Kansas City

	5-day week capacity	Flour output	% capacity
Oct. 30-Nov. 6	224,250	275,482	123
Previous week	224,250	281,750	126
Year ago	221,750	272,332	123
Two years ago	287,500	244,288	85
Five-year average			188
Ten-year average			158

Representative Mills, Outside of Kansas City (Including Wichita and Salina)

	5-day week capacity	Flour output	% capacity
Oct. 30-Nov. 6	1,090,750	1,262,930	116
Previous week	1,090,750	1,302,574	119
Year ago	1,068,800	1,544,114	141
Two years ago	1,032,000	1,271,802	123
Five-year average			156
Ten-year average			134

BUFFALO

	5-day week capacity	Flour output	% capacity
Oct. 30-Nov. 6	522,000	567,112	109
Previous week	522,000	553,137	106
Year ago	493,500	549,125	111
Two years ago	475,000	566,157	119
Five-year average			17
Ten-year average			73

Millfeed Production

Mills in the Northwest, Southwest and at Buffalo, representing 75% of the combined flour milling capacities of those areas, reported production of 54,526 tons of millfeed for Oct. 30-Nov. 6 compared with an output of 59,805 in the corresponding week a year ago. Production for the previous week of Oct. 23-30 was 55,112, compared to 56,207 in the corresponding week of last year.

PACIFIC COAST

Principal Mills on the Pacific Coast

California, Oregon and Washington Mills

	5-day week capacity	Flour output	% capacity
Oct. 30-Nov. 6	466,500	411,463	88
Previous week	466,500	412,994	89
Year ago	466,500	534,669	115
Two years ago	315,000	546,334	173

DURUM PRODUCTS OUTPUT

Durum products output of mills reporting to The Northwestern Miller, in sacks, based on five-day week:

	5-day wk. capacity	Wkly. production	% of capacity
Oct. 30-Nov. 6	177,500	202,023	114
Previous week	177,500	192,744	109
Year ago	156,500	208,535	133

	Crop year production
July 1-Nov. 6, 1960	3,395,667
July 1-Nov. 8, 1959	3,501,999

The MILLER

points up

the FACTS

that MATTER

THE NEW YORK STOCK EXCHANGE

Quotations on baking, milling and allied stocks listed on the New York Stock Exchange:

	1960 High	1960 Low	Oct. 31, 1960 Close	Nov. 7, 1960 Close
Allied Mills, Inc.	39½	32	33½	34⅞
Allis-Chalmers	40	22	22⅛	24½
American Bakeries Co.	44⅜	38½	39	38⅞
American Cyanamid	59⅛	39¾	42⅛	42¾
Archer-Daniels-Midland Co.	40¼	30⅝	37⅞	33¼
Borden	56¾	40¼	51	55¾
Continental Baking Co.	48½	37½	40	41⅛
Pfd. $5.50	107	100½	101¾	103½
Corn Products Refining Co.	71¼	46½	66½	67⅞
Cream of Wheat	39½	31½	35	35
Crown Zellerbach Corp.	54	39¾	43¼	45¾
Dow Chemical	99⅛	70⅛	72½	74⅛
General Baking Co.	12⅜	9	9¼	9½
General Foods Corp.	70	61½	62½	63½
General Mills, Inc.	31⅞	23⅜	28¼	29
Pfd. 5%	111	101½	....	105½
Merck & Co.	96½	73	77½	82¾
Monsanto Chemical Co.	55⅞	35⅛	38⅝	40⅞
National Biscuit Co.	69⅛	49¾	68	69
Pfizer, Chas.	38¼	26⅜	28	29
Pillsbury Co.	39½	31⅝	35½	35¾
Pfd. $4	97	91	....	94½
Procter & Gamble	136	81¾	125	129½
Quaker Oats Co.	61	42	55¼	58¼
Pfd. $6	136	125½	....	134
St. Regis Paper Co.	55½	30¾	31	33¼
Standard Brands, Inc.	49⅝	35⅛	44	44¾
Sterling Drug	66½	44½	58¾	59⅝
Sunshine Biscuits, Inc.	101¼	85	96½	98¼
United Biscuit of America	39½	24	33⅜	32
Ward Baking Co.	15¾	10	10⅛	10¼
West Virginia Pulp & Paper Co.	56¾	30⅛	32	34¾

Stocks not traded:

	Bid	Asked
Allis-Chalmers, $3.25 Pfd.	96	102
Corn Products Refining Co., $7 Pfd.	87	90
Crown Zellerbach Corp., $4.20 Pfd.	91	92½
General Baking Co., $8 Pfd.	139	140
Merck & Co., $3.50 Pfd.	75½	78
National Biscuit Co., $7 Pfd.	149	150
Pfizer, Chas., Pfd.	97½	99
St. Regis Paper Co., $4.40 Pfd.	92	94
Standard Brands, Inc., $4.50 Pfd.	73½	75
United Biscuit of America, $4.50 Pfd.	103	104
Ward Baking Co., $5.50 Pfd.	83	84
West Virginia Pulp & Paper Co., Pfd.	93½	96½

THE AMERICAN STOCK EXCHANGE

Quotations on baking, milling and allied stocks listed on the American Stock Exchange:

	1960 High	1960 Low	Oct. 31, 1960 Close	Nov. 7, 1960 Close
Burry Biscuit Corp.	16⅝	7¼	14⅞	15⅞
Horn & Hardart Corp. of N.Y.	41	32½	38	39
Wagner Baking Co.	4	3	3⅝	3¾

Stocks not traded:

	Bid	Asked
Horn & Hardart Corp. of N.Y., $5 Pfd.	97½	98
Pfd. $8	128	129½
Wagner Baking Co., Pfd.	71	75

CANADIAN STOCKS

	1960 High	1960 Low	Oct. 28, 1960 Close	Nov. 7, 1960 Close
Canada Bread	4.15	3.35	3.70	3.55
Pfd. B	52	48½	48½	48⅝
Can. Bakeries	7	5	5	*4.50
Can. Food Prod.	4.75	3.10	4.00	3.25
A	15	6½	13	13½
Pfd.	80⅛	45⅛	75	80
Catelli Food, A	41	38	41	40
Cons. Bakeries	9	7⅜	*7	7⅜
Dover Ind.	13½	11	*10⅞	*10¼
Pfd.	9	9	9	9
Federal Grain	50	39	48½	47¼
Pfd.	28	25½	28	28
Gen. Bakeries	9	6⅞	7	7⅛
Maple Leaf Mlg.	16⅛	11¼	15⅝	14⅞
Pfd.	95	85	90	91
McCabe Grain	33	26	29½	28¾
Ogilvie Flour	46½	40	44	44
Pfd.	140	125	134	133
Standard Brands	42¼	37¼	39½	42¼
Toronto Elevator	13	9	11	11½
United Grain, A	15⅝	15½	15½	15½
Weston, G., A	38⅛	29	37	37¼
B	39	28½	38	39
Pfd. 4½%	92⅛	82	91½	91

*Less than board lot.

There is a lot to be said for
GOOD JUDGMENT

Good judgment has guided Ogilvie Flour Mills for more than a century and a half of leadership in the milling of fine flour. It's good judgment that causes Ogilvie to select only the choicest wheat . . . that combines their skill and knowledge with some of the most modern milling equipment in the world, to produce the unvarying high quality that their customers expect of the name "Ogilvie".

Ogilvie Flour Mills intend to continue using good judgment . . . the same good judgment that tells you it's wise to buy quality!

Manufacturers of Ogilvie Flour—Ogilvie Ready Mixes —Ogilvie Vita-B Wheat Germ Cereal—Ogilvie Oats —Ogilvie "Miracle" Feeds for livestock and poultry.

THE OGILVIE FLOUR MILLS CO., LIMITED

Mills at: Montreal—Fort William—Winnipeg—Medicine Hat—Edmonton
Cable Address: OGILVIE MONTREAL—all codes used

LEADING FLOUR IMPORTERS ABROAD

Many of the firms appearing in this list are available to handle the importation of other products besides flour. Some specialize additionally in cereals, some in bakers' sundries and others in feed grains and ingredients. Most of them have connections in adjacent countries and are equipped to handle both import and export business on an extensive basis. For a list of recommended firms dealing in specific commodities or in specific countries write to THE Northwestern MILLER, P.O. Box No. 67, Minneapolis 40, Minn., U.S.A.

ENGLAND

H. Cohen & Co., Ltd.
Hambro House, Vintners' Place
LONDON, E.C. 4
Cable Address: Bortrite, London

Mardorf, Peach & Co., Ltd.
52, Mark Lane LONDON, E.C. 3
Cable Address: "Dorfeach," London

Vaughan Thomas & Co., Ltd.
The Corn Exchange Building
52/57 Mark Lane LONDON, E.C. 3
Cable Address: "Avaumas," London

GERMANY

Einfuhrhandel Mannheim
Hans Werle
MANNHEIM/GERMANY, E2., 1-3
Cable Address: "Einfuhr" Telex 0463270

DENMARK

Brodr. Justesen
COPENHAGEN
Cable Address: "Justesens," Copenhagen

SCOTLAND

Farquhar Brothers
50 Wellington Street GLASGOW,C.2
Cable Address: "Glencairn," Glasgow

McConnell & Reid, Ltd.
19 Waterloo St. GLASGOW
Cable Address: "Marvel," Glasgow

D. T. Russell & Baird, Ltd.
106 Hope Street GLASGOW,C.2

HOLLAND

Bulsing & Heslenfeld N. V.
Established 1885
Damrak 20-22
AMSTERDAM (C)
Cable Address: "Heslenfeld," Amsterdam

STOLP & CO., LTD.
47-48 Damrak AMSTERDAM
Cable Address: "Cleo"

Gebrs. Van Den Bergh's N. V.
ROTTERDAM
Cables: Locomotion Rotterdam

N. V.
Algemeene Handel-en Industrie Maatschappy
"MEELUNIE"
Heerengracht 209 AMSTERDAM

N. V. Agentuur & Commissiehandel
v/h P. C. Vis & Co.
AMSTERDAM
Cable Address: "Visco"

Luchsinger, Meurs & Co.'s
Handelsmaatschappij, N.V.
AMSTERDAM—C.
Cable Address: "Matluch"

M. WITSENBURG JR. N. V.
Postbox 945 AMSTERDAM C.
Cable Address: "Witburg"

GRIPPELING & VERKLEY N. V.
Flour Specialists Since 1889
AMSTERDAM
Cable Address: Bygrip, Amsterdam

Millers in 44 Overseas Nations Read Every Issue of the Miller

Maple Leaf Fiscal Report Indicates Bright Outlook

Maple Leaf Milling Co. has turned in an annual fiscal report for the year ended July 31 which it considers "eminently satisfactory" as a tribute to the company's 50th anniversary which is now being celebrated.

Clifford E. Soward

This optimistic picture is drawn for shareholders by Maple Leaf's president, Clifford E. Soward, in spite of the fact that some key divisions were unable to contribute their expected share of the total earnings due to conditions beyond their control.

Net profits for the fiscal year amounted to $1,200,502, or $2.08 a common share, compared with $1,281,488, or $2.24 a share, in 1959.

Relocation Plans

Maple Leaf—despite the tragedy of its recent fire at Port Colborne—is planning to turn this disaster to use by relocating plant capacity in locations most economical to operations. A careful study is underway of the economics of the situation to determine the proper size and locations of the new capacity in light of present day conditions. Planning already is well advanced for the rebuilding of a plant which is essential to take care of the firm's requirements in Ontario.

It is anticipated that over $6 million should be recovered in respect of the Port Colborne buildings and equipment, in addition to reimbursement for inventories and loss of profits.

Little if any loss of business in the domestic market will result from the recent, devastating fire at Port Colborne, advises Mr. Soward. Needs of all of the company's customers are being taken care of by increased output of its four other plants and limited outside purchases.

These arrangements, in conjunction with profit insurance coverage, should result in maintaining of satisfactory company earnings this year, he stated.

And further, at the year's end—or soon thereafter—there will be new Maple Leaf capacity to place it in a stronger position than before.

Working capital increased by $748,712, to $7,732,012 at July 31. Capital expenditures were $875,134 and divi-

MAPLE LEAF MILLING CO., LTD.
AND SUBSIDIARIES
Consolidated Balance Sheet, July 31, 1960

ASSETS

CURRENT:		
Cash		$ 10,726
Accounts and bills receivable, less allowance for possible loss in collection		12,097,583
Accounts receivable from controlled bakeries		102,160
Inventories valued as follows:		
Spring wheat held as agents for The Canadian Wheat Board at cost	$ 4,025,851	
Flour, winter wheat, coarse grains, cereals, feeds, bags and other products and material at the lower of cost or market	6,279,869	10,305,720
Prepaid expenses		318,164
		$22,834,353
Inventories of repair parts and supplies		166,625
INVESTMENTS:		
Shares of controlled bakery companies based on revaluations by the management in 1926 (approximate market value $2,097,000)	$ 2,414,976	
Other investments, mortgages, exchange seats and properties, less amounts written off	773,921	3,188,897
FIXED:		
Real estate, plant and equipment, at the depreciated replacement valuation as appraised by Canadian Appraisal Co., Ltd., as of June 15, 1929, in the case of Maple Leaf Milling Co., Ltd., and as at May 30, 1925, in the case of one subsidiary, plus subsequent additions at cost	$22,135,032	
Less accumulated depreciation	12,778,855	9,356,177
Patents, trade marks and goodwill		3
		$35,546,055

LIABILITIES

CURRENT:		
Bankers' advances (secured)		$ 8,385,057
Short term notes payable		3,000,000
Owing for undelivered purchases of grain (secured)		273,796
Accounts and wages payable and accrued charges		2,553,117
Income and other taxes payable		690,371
Instalment on funded debt payable within one year		200,000
		$15,102,341
FUNDED DEBT:		
First mortgage sinking fund bonds 3¾% series due 1963—Issued	$ 2,500,000	
Less redeemed or purchased for redemption	1,303,000	
	$ 1,197,000	
General mortgage bonds, series A 4½% to Oct. 1, 1960, thereafter 5¼%—repayable $200,000 on Oct. 1, 1961, and 1962, and $3,200,000 on July 1, 1963 (instalment of $200,000 due Oct. 1, 1960, included in current liabilities)	$ 3,600,000	
Series B—5¼%, maturing July 1, 1963	1,000,000	
	$ 4,600,000	5,797,000
DEFERRED CREDIT:		
Tax reductions applicable to future years		715,700
Minority interest in the common shares of a subsidiary		12,527
SHAREHOLDERS' EQUITY:		
Capital		
Authorized:		
31,441.61 5% cumulative redeemable preference shares of $100 par value redeemable at $104 (after deducting 48,558.39 shares purchased and cancelled)		
600,000 common shares of no par value		
Issued:		
19,124.29 preference shares (after deducting 6.54 shares purchased and cancelled during the year)	$ 1,912,429	
532,414 common shares	3,161,967	
Less 496 preference shares and 3,859 common shares held by a subsidiary	53,870	$5,020,526

Contributed surplus	576,715	
Earned surplus	6,440,605	
Excess of book value of net assets of a subsidiary on acquisition over the investment therein	1,880,641	13,918,487
CONTINGENT LIABILITY:		
Customers' paper under discount $402,300		
		$35,546,055

STATEMENT OF CONSOLIDATED PROFIT AND LOSS

Earnings from operations before deducting the charges set out below		$ 3,585,189
Dividends from controlled bakery companies		81,394
Income from other investments		16,551
Profit on sale of fixed assets		44,845
		$ 3,727,979
DEDUCT:		
Interest on funded debt	$ 272,576	
Depreciation on buildings, plant, equipment, trucks and automobiles	1,005,118	
Appropriation for employees' pensions	233,278	1,510,972
Profit before deducting income taxes and minority interest in profit of subsidiary		2,217,007
Taxes on income	$ 1,016,000	
Minority interest in profit of subsidiary	505	1,016,505
Net profit for the year		$ 1,200,502

STATEMENT OF CONSOLIDATED EARNED SURPLUS

Balance July 31, 1959		$ 5,649,937
Net profit for the year		1,200,502
		$ 6,850,439
Deduct dividends declared during the year:		
On preference shares, 5%	$ 95,637	
On common shares—two dividends of 25c per share each paid Nov. 30, 1959, and May 1, 1960, and one dividend of 10c per share paid July 30, 1960	318,987	
	$ 414,624	
Less subsidiary company's participation in the above dividends	4,790	409,834
Balance July 31, 1960		$ 6,440,605

STATEMENT OF CONSOLIDATED CONTRIBUTED SURPLUS

Balance July 31, 1959	$ 576,593
Discount on purchase of preference shares for cancellation during the year	122
Balance July 31, 1960	$ 576,715

dend payments $409,834. Current assets of $22,834,353 are exclusive of shares of controlled bakeries having a $2,097,000 market value. Bank loans and short term notes of $11,385,057 are included in current liabilities of $15,102,341. Earned surplus was $6,440,605 at July 31.

The company has maintained its position in the export flour market, but severe competition from countries enjoying generous government subsidies has forced a reduction in margins. The British preference on Canadian wheat and flour must be retained at all costs in any re-alignment of trade agreement, Mr. Soward concluded. «

AACC Section Told Of Research Needs

What does the biscuit and cracker industry expect from research?

That was the question asked—and answered—by Russell M. Shultz, senior vice president, National Biscuit Co., in an address before the November meeting of the New York Section, American Association of Cereal Chemists.

Mr. Shultz cited the tremendous changes that have taken place in the U.S. in a comparatively few years, adding his comments on the speed of change.

He reviewed the new products coming on the market all the time and the old ones which are disappearing, using this as his talking point to bring in the necessity of more and better research in such areas as methods, product development and cost reduction.

"A good measure of flour quality, for example, is urgently needed in the baking industry," he stated. Also needed, according to Mr. Shultz, are better methods of mixing, more efficient, economical baking ovens, and more research progress in the problem area of staling.

In conclusion, Mr. Shultz reminded his audience that the baking industry has the equipment, it has the personnel and the "climate" to do its job. What it needs, he said, is enough of the "proper type of thinking," the "problem solving" type of thinking as against the type of thinking which is content to say "let well enough alone." «

AWREY TO EXPAND

Awrey Bakeries, Inc., Detroit, is planning a major expansion of its headquarters. A building permit listing construction of a five-story addition with a valuation of $600,000 has been issued to Awrey. «

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Montreal, Keewatin, Winnipeg, Medicine Hat

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International Milling Co. is shifting positions on its executive team to keep pace with changes in the baking industry. As a result, responsibilities have been assigned covering both sales and service on a regional basis. Its eastern sales division has been divided into four areas, and these men move up to positions of regional management: **K. V. Clawson** becomes sales manager responsible for the entire New England area, headquartering in Boston. **C. F. Bryan** takes over as sales manager for the Philadelphia market,

K. V. Clawson

A. B. Reinertsen

plus the states of Pennsylvania, Maryland, Delaware, the District of Columbia and southern New Jersey. He will headquarter in Philadelphia. **A. B. Reinertsen** becomes sales manager in charge of the metropolitan New York market, headquartering there. **F. A. Kendall** takes over as district sales supervisor in Buffalo and the surrounding area. Mr. Clawson began with International in 1926, Mr. Bryan in 1953, Mr. Reinertsen in 1949 and Mr. Kendall in 1955. Announcement of the assignments comes from **M. C. Alvarez**, vice president and general manager of the eastern sales division.

F. A. Kendall

C. F. Bryan

●

A nominating committee of the Millers National Federation has unanimously recommended **Ben J. Greer**, the Pillsbury Co., to fill the vacancy from District 5 on MNF's board of directors. Ballots will be sent to the District 5 membership in a special election to fill the vacancy which was caused by the resignation of **James L. Rankin**, Pillsbury.

Ben J. Greer

Mrs. J. W. Hardy

General Mills, Inc., has appointed **Mrs. Jewell W. Hardy** as millfeed sales representative at Oklahoma City, succeeding **Meaze C. Sauer**, now retired after 26 years with the company. **John Branston**, manager of millfeed sales for GMI's flour division, says Mrs. Hardy will handle sales of millfeed from the firm's Texas and Oklahoma plants. Her sales territory will cover the southwestern and southeastern U.S. Mrs. Hardy is experienced, having been actively engaged in millfeed trading for more than 20 years.

●

Frank E. Dilling, former assistant manager, frozen food packaging, Crown Zellerbach Corp.'s Western-Waxide Division, has been promoted to assistant general sales manager for Western-Waxide at San Leandro.

●

Stephen J. Loska, formerly with the Pillsbury Co. at Minneapolis, is now in Glenview, Ill., with the research and development division of National Dairy Products Corp. He's senior research technologist, living at Glenview, Ill.

Stephen J. Loska

●

When the Amarillo office of the Santa Fe Railroad gave up its head bookkeeper in 1917 the milling industry acquired him, along with a dedicated, long-term representative. We're speaking of **A. E. (Pat) Murphy**. Now he's retired after 28 years with Morten Milling Co., division of Burrus Mills, Inc. He started as branch manager for a Wichita miller, 11 years later became branch manager in Little Rock, and successively assistant sales manager of the firm's eastern division, and branch manager of the Houston office. It was at Houston in 1932 that he first contacted Burrus as division sales manager of bakery and family flour for Texas Star Flour Mill, Galveston. Mr. Murphy was sales manager of Texas Star in 1943, then took over as bakery sales manager for Morten. When the Morten offices were consolidated with those of Burrus in 1946 he became the personal contact

A. E. Murphy

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BOX 8505
MONTREAL, CANADA

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Codes: Bentley's—Riverside

between the mill and large bakeries in Texas and New Mexico. Since retirement, Mr. Murphy and his wife have been taking it easy—and they report the fishing excellent.

●

C. V. Egekvist, president, Egekvist Bakeries, Inc., Minneapolis, announced that the bakery has acquired the services of **Parke A. Heffern,** formerly vice president and general manager, Emrich Baking Co., Minneapolis. Mr. Heffern will assume executive responsibilities with the company. He comes to Egekvist with a wide variety of bakery field experience.

Parke A. Heffern

●

The organization planning and personnel departments of the Pillsbury Co. have been combined under one executive, and that man is **Robert D. Watson**. His title becomes director of personnel and organization planning. For five years he headed the organization planning department. The personnel department was headed by **John H. Neufeld**, who now retires as director of personnel after 32 years with Pillsbury, with credit for having been instrumental in establishing and developing the personnel function within the company. Mr. Watson is a native Minnesotan, a graduate of the University of Minnesota, a former Navy lieutenant, and joined Pillsbury in 1946 as a staff member of the personnel department. He was named associate director of personnel in 1951 and manager of organization planning in 1955.

Robert D. Watson

●

Frank Schneider, president, Twin City Machine Co., Minneapolis, recently underwent major surgery in Rochester, Minn., in connection with a recurring condition stemming from injuries suffered in an automobile accident almost two years ago. He is still confined to the hospital.

●

Convalescing at home after a bout at the hospital with pneumonia—and from all reports doing well—is **Alden Ackels**, Bay State Milling Co., Winona, Minn., vice president of the Association of Operative Millers. Mr. Ackels plans an early return to work. «

HEARTY EATERS best describes these members and guests of District No. 9, Association of Operative Millers. "Filling the lifeline" and keeping an eye on the bread plate are, left to right: Glen W. Fisher, Fisher Flouring Mills Co., national executive committeeman; William Buffum, Centennial Mills, Inc., newly elected vice chairman; Richard Schmidt, Centennial Mills, secretary-treasurer; Elmer Holtz, Iglehart Bros., district executive committeeman; Donald S. Eber, AOM's executive vice president; Curtis P. Lindley, Centennial Mills, retiring district chairman; William Rowan, General Mills, Inc., newly elected district chairman, and Stuart Butler, Maple Leaf Milling Co., AOM president. They're dining during the district's 24th annual convention held in Seattle.

Maple Leaf Milling Co. Limited.

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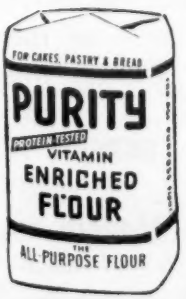

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MARKET QUOTATIONS AT A GLANCE

FLOUR

November 9 Quotations, Based on Carlots, Prompt Delivery

	Kansas City Hard Winter	Minneapolis Spring	Buffalo Spring	Chicago	New York	Seattle
Bakery short patent	$5.20@5.30	$5.50@5.60	$6.06@6.47	$...@...	$...@...	$...@...
Bakery standard patent	5.10@5.20	5.40@5.50	5.96@6.37	...@...	...@...	...@...
First clear	5.10@5.15	...@...	5.30@5.74	...@...	...@...	...@...
High gluten	5.45@5.55	5.75@5.85	6.31@6.71	...@...	...@...	...@...
*Family	6.15@7.20	...@7.20	6.90@7.10	...@...	...@...	...@7.90
*Bakers fancy cake flour	...@...	...@...	...@...	...@...	...@7.85	...@...
**Straight grade cracker flour	...@...	...@...	...@...	...@5.30	...@...	...@...
*Pastry	...@...	...@...	...@...	...@...	...@...	...@5.38
Rye, white	...@...	4.03@4.13	...@...	4.40@4.45	...@...	...@...
Rye, medium	...@...	3.83@3.93	...@...	4.25@4.35	...@...	...@...
Rye, dark	...@...	3.28@3.38	...@...	3.72@3.80	...@...	...@...
Semolina blend	...@...	...@6.05	...@...	...@...	...@...	...@...

	Toronto	Winnipeg
Spring top patent	*$6.30@6.35	$ ...@...
Bakers	**5.00@5.10	...@...

MILLFEED

November 9 Quotations, Based on Carlots, Prompt Delivery

	Minneapolis		Kansas City		Chicago		Seattle	
	Sacked	Bulk	Sacked	Bulk	Sacked	Bulk	Sacked	Bulk
Bran	$38.00@39.00	$34.00@35.00	$36.00@36.50	$31.50@32.00	$39.50@40.50	$32.50@33.50	$....@....	$....@....
Std. midds.	37.50@38.00	33.50@34.00	....@....	32.00@32.50	41.50@42.50	36.50@37.00	50.00@51.00	46.00@47.00
Red dog	....@42.00	....@....	....@....	....@....	....@....	....@....	....@....	....@....
Shorts	....@....	....@....	35.50@36.00	33.00@33.50	....@....	....@....	....@....	....@....
Wheat millrun	....@....	....@....	....@....	....@....	....@....	....@....	41.00@42.50	38.00@39.50

	Bran	Shorts	Middlings
Toronto*	$51.00@52.00	$53.00@54.00	$58.00@59.00

*Flour and millfeed prices 100 lb. cottons.

**Flour prices 100 lb. papers.

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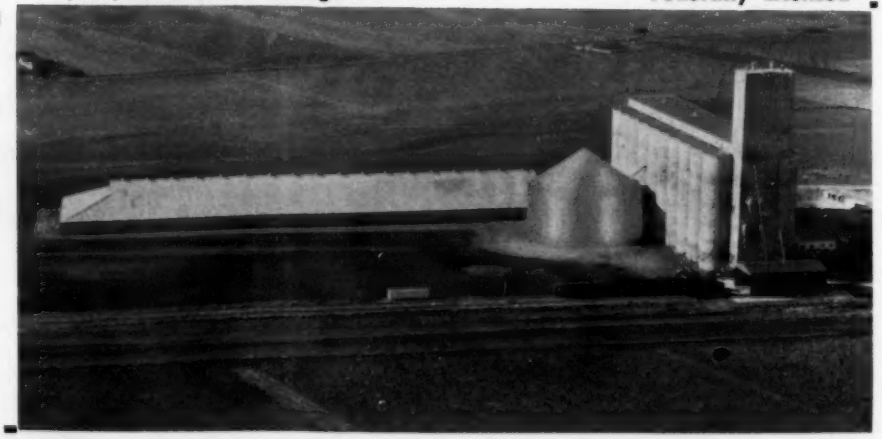


October Flour Output 21,821,423 Cwt.; Slight Gain Indicated Over September

U.S. wheat flour production for October reached 21,821,423 cwt., as estimated by THE Northwestern MILLER, representing a gain of 178,423 cwt. (.8%) over the official September output of 21,643,000 cwt. reported by the Bureau of the Census.

However, total output dipped 589,577 cwt. (2.6%) from October of last year, which was reported officially at 22,411,000 cwt. The current October had 21 working days, as did September, and October of 1959 had 22 working days.

October's daily average output amounted to 1,039,115 cwt., a rise of 8,115 cwt. (.8%) over the census bureau's September figure of 1,031,000 cwt. October also showed up better by 20,115 cwt. (2%) than October of the previous year.

(The official September production of 21,643,000 cwt. represents a difference of 448,131 cwt., or 2%, from the estimate of 21,194,869 cwt. Official daily output of 1,031,000 cwt. is a difference of 21,721 cwt., or 2%, from the estimate of 1,009,279 cwt. These estimates appeared in THE MILLER on Oct. 17, page 69.)«

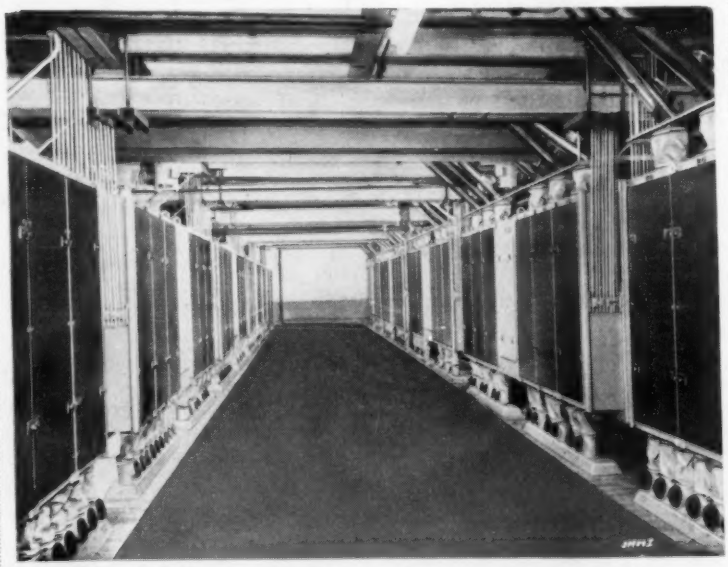
U.S. WHEAT FLOUR PRODUCTION OCTOBER, 1960

Mills reporting to THE Northwestern MILLER account for approximately 78.8% of the total U.S. flour output. Figures for Buffalo, Kansas City and Minneapolis represent 100% of production for those points in hundredweights.

Minneapolis	1,049,798
Interior Northwest	2,378,227
NORTHWEST	3,428,025
Kansas City	1,154,272
Interior Southwest	5,267,802
SOUTHWEST	6,422,074
BUFFALO	2,590,844
CENTRAL & SO. EAST	2,923,053
NO. PACIFIC COAST	1,831,286
TOTAL	17,195,282
Adjusted	78.8
U.S. TOTAL	21,821,423
DAILY AVERAGE	1,039,115

Bureau of Census reported 21,643,000 sacks (1,031,000 daily) for September, 1960.

Bureau of Census reported 22,411,000 sacks (1,019,000 daily) for October, 1959.



DAILY GRINDING capacity of Semoulerie Nouvelle, Marseille, France, has been raised from 145 tons to 200 tons, 24 hr., due to these 10 high-capacity sifters installed by Buhler Bros. The MPAD "Plan-O-Star" sifters were installed in the existing building, thereby saving floor space, making the over-all operation France's biggest pneumatic semolina mill. Buhler Paris planned and supervised remodeling and Buhler of Uzwil furnished the equipment and erected it in a record two months. The mill also is based on a carefully studied cleaning section, three-sieve-layer purifiers, MDD rollermills and pneumatic conveying of millstocks.

Roy W. Milner, Grain Commissioner, Planning Retirement

Roy W. Milner, retiring chief commissioner of the Board of Grain Commissioners for Canada early in the new year, was guest of honor at a testimonial dinner at the Fort Garry Hotel in Winnipeg. C. D. Howe, former federal minister of trade and commerce, was chairman. Representatives of all phases of industry associated with the grain trade, including heads of Canada's two large railway systems, the Canadian Pacific and Canadian National, were present. Mr. Milner will have served agriculture and transportation in Canada 50 years when his retirement becomes effective.

Roy W. Milner

Born in Brampton, Ont. in 1892, he came to Winnipeg when quite young and at 17 joined Zenith Grain Co. He remained with that firm until 1911, when he started his own company, Motor Cartage. At the outbreak of the First World War in 1914 Mr. Milner left his business to go overseas. In 1917, a member of the Motor Transport Corps, he was awarded the meritorious medal. In 1951 he accepted a federal government post as transport controller to break the transportation crisis resulting from huge grain crops and heavy ore movements. In 1956, he resigned his government position and became chief of the Board of Grain Commissioners. This board is responsible for guaranteeing the quality of Canadian grain in world markets.«

Crop Year Payments To Western Farmers

Western Canadian farm payments under Prairie Farm Assistance Act for 1959-60 crop year amounted to $20,429,462, totalling fifth highest in the 20-year history of PFAA. In addition to these disbursements, federal government paid $6,229,641 in connection with snowed-under crops in the fall of 1959. This sum matched contribution of the prairie province governments and was paid to western farmers who were prevented by snow from harvesting half or more of their crops.«

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GRIST of GRINS

Bride: "The best two things I cook are meat loaf and apple dumplings."

Groom: "Which is this?"

●

"Young man in the back of the room," said the prof, "what was the date of the signing of the Declaration of Independence?"

"Dunno."

"Who was Tom Paine?" asked the prof.

"Dunno."

"Well, well," said the prof, "I assigned these questions last Thursday. What were you doing last night?"

"Drinking beer with some of the boys."

"You mean," demanded the teacher, "to stand there and tell me that? How do you expect to pass this term?"

"I dunno. I just come to fix the steam pipes."

●

Patient (in hospital): "Doctor, are you sure this is pneumonia? Sometimes doctors prescribe for one thing and the patients die with something else."

Dr. Joseph (with dignity): "When I prescribe for pneumonia, you die of pneumonia."

●

Since Ed couldn't stop snapping his fingers, he went to see a psychiatrist.

"Why do you do this?" asked the doctor.

"It keeps the tigers away, doc."

"My good man," replied the psychiatrist, "there are no tigers within 6,000 miles."

"Effective, isn't it?" he beamed.

●

Teacher: "Johnny, name two documents that have contributed heavily to our government."

Johnny: "Forms 1040 and 1040A."

●

"You say typographical errors often bring out the truth?"

"Yes, listen to this item: 'The doctor felt the patient's purse and announced there was no hope.'"

Grandma could get away with it!

Grandma's recipes were a pinch of this and a dibby-dab of that.

That was fine for Grandma. But it won't work in process blending. Here, you need precise control, minute-to-minute accuracy, exact formulations.

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Bread-makers . . . keepers of the faith

Sounds a little solemn? Nevertheless, it's true. Every time a little girl or boy lifts hands in a grace and says: "Give us this day our daily bread," he thinks, literally, of bread. And he isn't pleading for it; in America he has complete faith that there will always be bread . . . *good* bread, bread to help him grow. He can hardly imagine life without it.

And, in fact, life hasn't been without it for many thousands of years. Bread is basic, bread is here to stay.

And General Mills will continue to supply the finest flour to make that bread and keep that faith.

Good eating will always begin with bread

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